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ADAPTATION IN A BUSINESS NETWORK
COOPERATION CONTEXT

Helsingfors 2007

Adaptation in a Business Network Cooperation Context

Key words: adaptation, cooperation, business networks, interviews, survey, case studies, qualitative, quantitative

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Vaasa, January 2007

Åsa Hagberg-Andersson

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LIST OF PUBLICATIONS

PAPERS

Paper 1:

“Relations between Small and Medium-sized Suppliers and a Multinational Buyer in a Supply Network – a Study of Adaptation”, published in “Recent Studies in Interorganizational and International Business Research”, 1999, Vaasa University.

Paper 2:

“Developing Buyer-Supplier Relationships in a Supply Network”, an earlier version of the paper is published on-line at www.iot.ntnu.no/no/ninor in 2000.

Paper 3:

“Does Adaptation Pay off?”, published in 2006 in *Industrial Marketing Management*, volume 35.

Paper 4:

“Factors affecting Network Functioning - A Comparative Case Study Analysis, the paper is currently being reviewed for publishing in the *IMP* journal.

Paper 5:

“Adaptations in a Supplier – Manufacturer Network: Conceptual issues and an Empirical Illustration”, the paper is currently being reviewed for publishing in the *European Journal of Marketing*.

1 INTRODUCTION

Every firm is part of some kind of business network. In today's business one can say that competition does not only take place inside the network, but also between networks. It has been suggested that networks pose managerial challenges for the companies involved and that we need to look closer at them from a conceptual point of view (Möller and Halinen, 1999). Managerial action is guided by how different relationships are framed and the results are of consequence to management (Håkansson and Snehota, 1995).

The competitive environment of companies is undergoing fundamental change and traditional markets are being replaced by networks, which pose a managerial challenge (Möller and Halinen 1999). Change and dynamics are central issues in network studies (Salmi 1995; Håkansson, Harrison and Waluszewski, 2004) and the major source of it is the interaction within relationships (Håkansson and Snehota, 1995). From its changing environment, a company can identify opportunities and threats and respond to them accordingly. These opportunities are vital, but also complex and demanding for the management of the company.

The complexity of managing networks and relationships has been discussed. One can distinguish between four levels of issues (Möller and Halinen, 1999). To understand the behaviour of companies in these environments, theories are needed to describe industries as networks and how they operate. Research is also needed on how to manage focal nets and network positions and how to manage network portfolios. The last level is research on how to manage exchanges in dyadic relationships. (Möller and Halinen, 1999) All of these levels pose research challenges from different angles. The last level stresses the importance of additional research on the dyadic development of the relationship between companies. This study contributes to this level.

Within the area of strategic management, the area of adaptation has been studied to some degree (Chakravarthy, 1982; Chakravarthy, 1986). Chakravarthy (1982) studied strategic management with adaptation as a minor issue. From strategic management we can identify the same need for focus on adaptation as within the IMP literature.

Chakravarthy (1982) talks about the process of **adaptive specialization**, which involves minimizing the misfit between the firm's organizational and material capacities. There lies also a focus on the adaptive ability of the firm and the **adaptive generalization**, which focuses on improving the material and organizational capacities of the firm. In connection to this strategy discussion there is also an ongoing discussion about **defensive, reactive and proactive strategies**, which can be linked to the adaptation research (Chakravarthy, 1982).

The **defensive** strategy implies that the company buffers itself from the environment, as it is susceptible and sensitive to changes in the environment. A company using the **reactive** strategy has a decision making strategy which is reactive. This type of company has enough material to be able to respond to changes in the environment, but because of bureaucracy the decision making strategy is often reactive. The **proactive** alternative implies a strategy which will enable the managers to make innovative decisions. This type of firm will be able to have a low vulnerability to environmental changes, as its managers can anticipate most environmental changes before they occur. This firm has an ideal combination and match of both material and organizational capacities for its managers to make use of in their strategy work. These three alternatives also imply that the strategy work fits the organization to a different degree. A firm using a defensive strategy has an unstable fit with its organizational arrangements towards its environment. The one using a reactive strategy has a more stable fit, with its more bureaucratic organizational arrangements and the one using a proactive strategy a more neutral fit. All these three alternatives also show different stages of adaptation (Chakravarthy, 1982). Chakravarthy (1986) also studied how one can identify useful measures of strategic performance, which can help to distinguish between well-adapted firms from mal-adapted ones, and the measurements are based on the above mentioned discussion in Chakravarthy (1982). Chakravarthy (1986) concludes that it is difficult and time-consuming to classify the quality of adaptation. In this non-IMP-stream of literature one can analyze pieces suitable to contribute to the IMP-view of adaptation.

Earlier research identified a shortcoming in explanations of how micro-level interactions to macro-level patterns are connected (Granovetter, 1973). An increasing number of researchers started to argue against the predominant perspective on markets and argued instead for a network perspective on industrial markets (Hammarkvist, Håkansson and Mattsson, 1982). These earlier more dominant ways of looking at the markets were disregarding the interaction between the buyer and seller, and a more dominant role for marketing in inter-firm cooperation was argued for (Hägg and Johanson, 1982). These ideas started a development and a discovery process, which was later followed by a considerable stream of research. For a noteworthy analysis and explanation see Mattsson and Johanson (2006). Later the interaction approach was added to this research discussion. These above mentioned books, as well as others, have created the base and the frame for the research in this area.

Research into industrial networks and cooperation has attracted increased interest during the last decades. Research within the area has suggested that maintaining long-lasting relationships can be more rewarding than switching cooperation partners from time to time (see more in Kalwani and Narayandas, 1995). In order to reach the goals of the company, a manager needs to carefully decide which actions need to be taken. Cooperation with other companies within the same network provides access to additional resources. In networks, companies can capitalize on opportunities, but they also need to carefully select with whom they cooperate. In today's business world, outsourcing is an important part of the business. In exchange and cooperation with other companies, some amount of adaptation takes place. Adaptation is needed in order to take the relationship further. The degree of adaptation is related to the characteristics of the companies involved. Adaptation affects the companies' situation and can be used in a conscious way. Increased awareness in the area of adaptation can benefit companies in their strategy work. It is beneficial to know in which way a manager can use the existing access to external resources that cooperation provides. But it is also important to know how to handle adaptation in company exchange in order to keep the balance in the relationship. There is a need (Brennan, Turnbull and Wilson, 2003) of exploring the area of adaptation in cooperative behaviour in order to develop the concept.

1.1 Research problem and purpose of the study

Adaptation has been dealt with in previous literature, but the focus of the studies has mainly been outside this phenomena, and it has mainly had a supporting role. This study focuses on this research gap. If the concept of adaptation is to be generalized, it is necessary to study it in different industrial contexts (Brennan and Turnbull and Wilson 2003, Canning and Hanmer-Lloyd 2002). Most literature has described the buyers' point of view in studied supply networks, whereas much less attention has been paid to the suppliers' view on them (Holmen and Pedersen, 2006). This study focuses on this research gap.

In order to be able to compete in today's business world each company needs to focus on how to be competitive. Continuously, buyers face challenges and problems and one of the goals is to continuously cut costs and improve the supply network. The buyer ends business relationships and some of the suppliers become ex-suppliers. Some small- and medium-sized suppliers have problems with scarce resources and fierce competition. The resources the companies have are of different characteristics and some of the suppliers' strengths towards the buyer are different from the others. Adaptation and cooperation between companies may have an impact on the individual company's strength to cope in the hardened competition. If companies come together and cooperate in certain areas, it can be possible to share resources and reach certain goals that one is otherwise unable to reach on one's own. It is also possible to decrease a buyers' power and in this way become more independent. Cooperation can be seen as channels to resources (Hammarkvist, Håkansson and Mattsson, 1982) as connections to other actors in a network are filled with opportunities and access to resources and knowledge, formed by complex interactions, adaptations and investments within and between the companies over time (Håkansson and Ford, 2002). Research in the area has identified a need to analyze adaptation (Brennan, Turnbull and Wilson, 2003; Canning and Hanmer-Lloyd, 2002) in order to further increase understanding of the phenomenon.

Cooperation between companies can be seen as a dyad in a focal network. Within this dyadic cooperation there is adaptation taking place to some extent. **The unit of analysis and the focus is** on the existing adaptive behaviour, the degree of adaptation and the

consequences of adaptation in cooperation taking place in **the dyad of the business network**. Separating adaptation and cooperation is hard as they very much go hand in hand. Where there is cooperation there is some kind of adaptation. Where there is adaptation there is also cooperation. This thesis analyze existing adaptation in cooperation between buyer and suppliers in business networks. Moreover, it provides a descriptive and analytical study of **how, why and to which extent** the companies adapt and cooperate.

The papers included in this thesis analyze different situations and cases of adaptation and cooperation. **The purpose of this thesis is to explore the area of adaptation in cooperation behaviour in order to theoretically develop the concept and contribute empirically to the phenomenon of adaptation.**

The research question of the thesis is:

In which ways, to which extent and why do adaptation and cooperation take place in the studied network and what are the consequences of it?

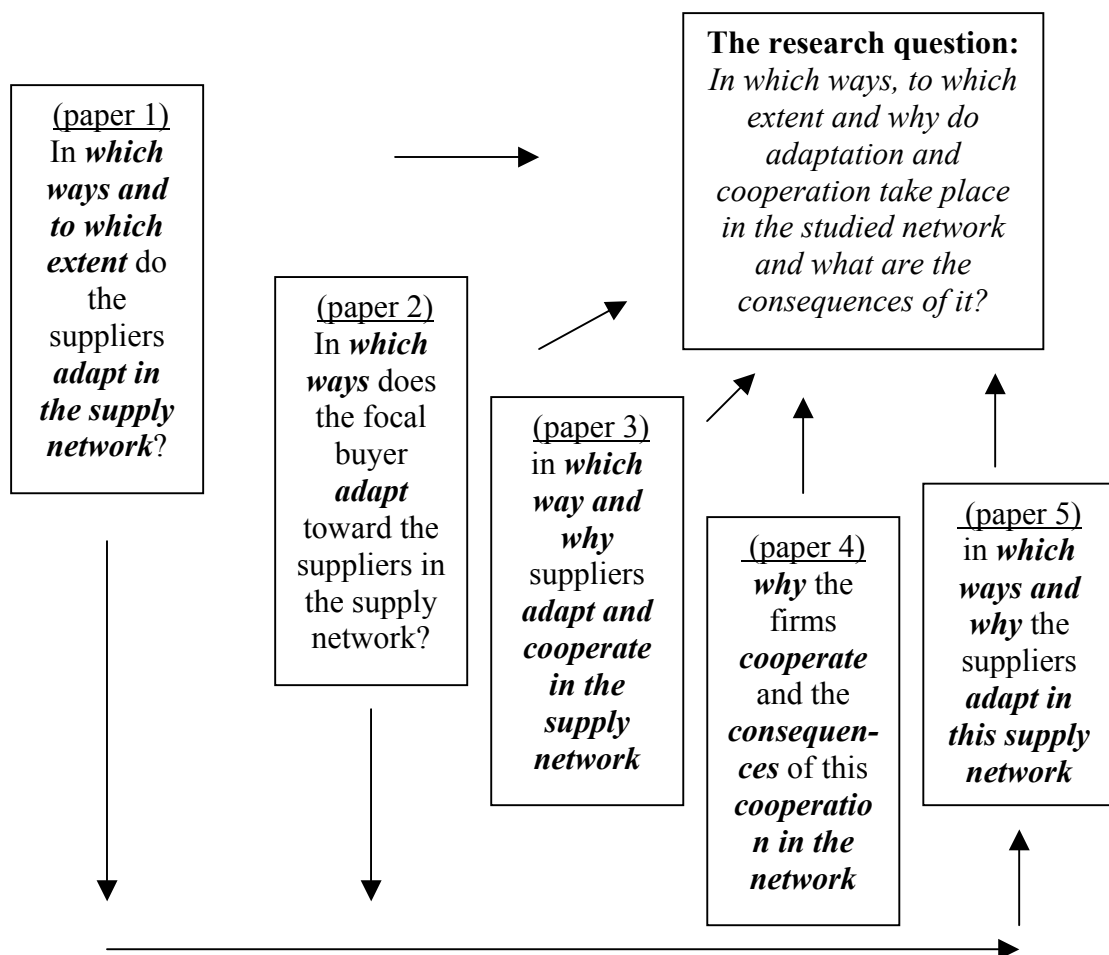
The contribution of the thesis will be increased awareness and knowledge of adaptive and cooperative behaviour in business networks.

The study will be done within the business network approach, the IMP-school of thought. The study will compare non-IMP literature, that is other studies related to interorganizational exchange, and relate these studies to the IMP-school of thought to the main focus areas of the study. The study will be carried out mainly from the supplier's point of view. The other side of the dyad, the perspective of the buyer, will partly be included. The focus of the study, however, will mainly be on the vertical stream of activities. The research focuses on a supplier network of a focal buyer.

The included papers contribute to the different areas of the research question (Figure 1).

Paper 1 study **in which ways and to which extent** the studied suppliers adapt. The second paper study the other side of the dyad and answers **how** the focal buyer adapts toward the suppliers. The third paper describes and analyses **how** and **why** suppliers adapt and cooperate in the calibration case. The fourth paper analyses **why** the firms cooperate and the **consequences** of cooperation. The last and fifth paper is based on the large scale survey to all suppliers in the studied supply network and this paper describes and analyses **in which ways and why** the suppliers adapt. This paper also discusses the **consequences** of adaptation.

Figure 1 The papers contribution to the research question



The figure (figure 1) describes how each of the included papers contribute to the research question of the study.

1.2 Positioning of the study

The focus of the study is mainly on adaptation in a context of cooperation in business networks. The author has chosen not to separate these two in the study, adaptation and cooperation, as they are closely woven together. The view on adaptation cannot be separated from the context it is a part of and should be analyzed as a part of this. There is very little adaptation without cooperation and there is no cooperation without adaptation. Adaptation is the base for the future of cooperation.

The study will not go deeper into the area of strategy or strategic management. In this area one can make a distinction between strategies of action triggered by changes in the external environment and the internal “strategy of structure” (Chakravarthy, 1982). This study will mainly include strategies of action triggered by the changes in the external environment, i.e. the business network.

There is a vast amount of literature in the area of trust, commitment, power or emotions. These elements, as others, are discussed in the study as part of the study since they support and enlighten the whole. The study will be limited to only discuss trust, power or emotions to some degree, as they are not in focus in the study, they only exist where they support the argument for the other areas in focus, i.e. adaptation and cooperation.

The study includes studies of suppliers, which are competitors, but the relation between competitors will not be focused on in the study. The study will not focus on the view of the buyer and its specific challenges and problems. The study will not either focus on the area of strategic alliances, which can be seen as a more formal way of cooperation (Badaracco, 1991) than the form focused on in this study.

1.3 Overview of the key concepts in the study

In this chapter the most central concepts for the study will be presented.

Adaptation: Buyer-seller adaptations are defined as “behavioural or structural modifications, at the individual, group or corporate level, carried out by one organization, which are initially designed to meet needs of one other organization” (Brennan and Turnbull, 1998:31). The term alignment (an adjustment of an object in relation to other objects) will be included within this definition. The definition by Brennan and Turnbull (1998) will be used as a starting point for the study, because it is more extensive than the other ones used within this area of research.

Business networks/industrial networks: Over the years, the term “networks” has been studied and defined in many contexts and in many ways. Business networks and industrial networks are used as synonyms in the study as in accordance with earlier studies (Kock 1991). Business networks can be defined as “a structure where a number of nodes are related to each other by specific threads” (Håkansson and Ford, 2002:133), and the interaction taking place in them. Within this definition the nodes can be described as the firms and the threads as relationships.

Cooperation: Easton and Araujo (1992:76) express cooperation as: "when two or more parties have objectives, which are mutually dependent".

Horizontal cooperation and vertical cooperation: cooperation between companies can be structured into horizontal or vertical cooperation forms. With vertical relations or cooperation, the relationship between the buyer/customer and supplier is meant; whereas the horizontal relation or cooperation is the relationship between companies on the same level in the supply chain (Nalebuff and Brandenburger, 1996). This is a way of expressing the relationship in a structural form. Some researchers choose to talk about roles (Bengtsson and Kock, 2000) and it is also important to remember that the forms and roles of cooperation may change depending on the situation and time. Vertical cooperation may become horizontal or the other way around. **This study focuses mainly on vertical cooperation.**

1.4 Outline of the study

In the first chapter the research is introduced. The research problem and the purpose of the study are presented. The research question is also discussed. In this first chapter the papers of the thesis are also presented.

Chapter 2 consists of the theoretical basis for the study. The main area of focus is the interaction in a network perspective and the main elements, which are included in the interaction model. The chapter then continues with a deeper analysis of the main areas of focus for the study, i.e. adaptation and cooperation. In the interaction model, these areas are included in the atmosphere and in all cooperative relationships where there is some degree of adaptation.

Chapter 3 consists of the empirical research design. The methodology is discussed, a comparison and discussion of different methods as well as a background for the study. A presentation of the data collection stages is then followed by a description of the companies included in the study. Finally, a short presentation of the empirical research design is given.

The results of the study are presented in Chapter 4. Different stages of the study are followed by a presentation of the different sub-stages of the study and the results. In this chapter, the contribution of each paper is also presented and how they are connected to each other. The main results of the study are presented and discussed at the end of the chapter. An evaluation of the study is also included.

Chapter 5 consists of theoretical and empirical conclusions as well as managerial implications and the chapter ends with some suggestions for future research.

Part two of the thesis comprises the following five papers:

Paper 1: The article is based on the **pilot study**. It is written together with Sara Åhman and Sören Kock. The area is **supplier's adaptation** in a business network. The paper

was selected for publication as a book chapter in “Recent Studies in Interorganizational and International Business Research”, Kock, S., & Larimo J. (eds), 1999, Vaasa University.

Paper 2: The paper is about **the focal buyer’s adaptation** toward its suppliers **and the perception about the supplier’s adaptation towards the buyer**. The paper is co-written together with Sara Åhman. An earlier version of the paper was presented at the 10th Workshop on Nordic Interorganizational Research in Trondheim, 2000 and published on-line at www.iot.ntnu.no/no/ninor.

Paper 3: The paper is about **suppliers’ adaptation and cooperation** within a supply network. The article describes adaptation and horizontal cooperation between suppliers as well as vertical adaptation and cooperation between the buyer and suppliers. The paper was published in 2006 in *Industrial Marketing Management*, volume 35.

Paper 4: The paper examines cooperation and network structure. The purpose is to **analyze the differences in network functioning** between intentionally and evolutionary created networks and consequences for cooperation. Motives, problems and management of cooperation within business networks are the focus areas in the paper. The paper has been reviewed by anonymous reviewers and published in the proceedings of the IMP-conference in September 2006 and it is co-written with Henrik Virtanen. A further developed version is included in the thesis and the paper is currently being reviewed for publishing in the IMP journal.

Paper 5: A paper based on the **analysis of adaptation in a studied supply network in the metal industry**. The paper discusses conceptual issues of adaptation and provides an empirical illustration. The co-author is Kjell Grønhaug. The paper is currently being reviewed for publication in the *European Journal of Marketing*.

2 THEORETICAL CONTEXT

In this chapter the theoretical basis for the study is presented. The main area of focus is the interaction in a network perspective and the main elements, which are included in the model. The chapter then continues with a deeper analysis of the main areas of focus for the study, i.e. adaptation and cooperation. In the interaction model, these areas are included in the atmosphere and in all cooperative relationships where there is some degree of adaptation.

Hayek (1945:523) argued that “economic problems arise always and only in consequence of change”. Hayek points out the value of information for all firms, as firms change their behaviour due to the information they get through the market system. Adaptation implies change and it has been discussed in different ways by different researchers (Williamsson, 1991). Adaptations can be addressed in connection to firms as autonomous, and others choose to see them more as connected, as in adaptations in relationships and networks. The focus in this study is on adaptation and cooperation connected to relationships and networks.

In industrial systems, companies are involved in activities like production, distribution and the use of goods and services, and we describe such systems as networks of relationships in these firms (Johanson and Mattsson, 1987). These relationships need to be studied, as many dependencies lie within these connections. **Inter-organizational theory** focuses on activities and processes, which take place between organizations, and it also forms the theoretical framework and base for the work of the IMP-group, i.e. the Industrial Marketing and Purchasing Group (Håkansson, 1982). Within inter-organizational theory, the organization is seen as dependent upon other organizations. The focus lies on relationships between organizations, instead of on a focus within them (Håkansson and Snehota, 1995).

The second theoretical area the IMP-group has built their work upon is the **new institutional economic theory**, as discussed in Williamsson (1975). According to Williamsson, exchange/transaction can take place within a market setting or it can be internalized in one organizational unit. From the point of view of technological

separability, one could very well carry out these internalized transactions in another separate organization. The transaction cost analysis can also be viewed as too micro technical to be able to handle dynamics and dependence in networks and Williamson has later taken another direction.

Due to human and environmental factors, markets may be considered to operate inefficiently. This is also why firms need to closely analyze with whom they cooperate. However, due to transaction costs, a firm will not often design and negotiate contracts with new partners. One reason is opportunism, and this makes markets operate inefficiently, as one can find an imbalanced dependence between the parties (Håkansson and Snehota, 1995).

Earlier research identified a gap in explanations of the ways in which the micro-level interactions are connected to macro-level patterns (Granovetter, 1973). Two important books which filled this gap were published in Sweden in 1982 (Hägg and Johanson, 1982; Hammarkvist, Håkansson and Mattsson, 1982) suggesting a network perspective on markets. These authors argued against the predominant micro economic perspective on markets and argued for a network perspective on industrial markets. The earlier focus on relative production costs, i.e. the market price as the coordinating mechanism, disregarded marketing and had a negative attitude to relationships in the market. The new focus was instead on relationships between companies as a mechanism for coordination and development. Hägg and Johanson (1982) argued for the role of marketing and against the “marketing mix” approach as it disregarded the interaction between buyers and sellers as well as the role of marketing for inter-firm cooperation. The books were published in Sweden and they served as a base for discussions about competitiveness in the Swedish industry; the studies also contributed to the emergence of the network perspective. The development can be seen as an important discovery process, which has later been followed by a considerable stream of research (Mattsson and Johanson, 2006).

These books (Hägg and Johanson, 1982; Hammarkvist, Håkansson and Mattsson, 1982) can be seen as the outcome of a confrontation as well as two coordinated compromises

between these two lines of Swedish research in industrial marketing. Both books analyzed and discussed markets and competitiveness. The first line, the "dyadic interaction approach" was reported in Håkansson (1982), and the second line adopted a wider perspective and can in a general way be characterized and described as a "systems interdependencies" view (Mattsson and Johanson, 2006).

The "dyadic interaction process" view concerned the supplier-customer relationship, and the "systems interdependence" view was concerned with the nature of markets or industry where the dyadic interaction took place. This later approach could be regarded as more open than the first approach and as the two approaches were to be combined there was a risk that the compromise would lead to a view, which would be too limited. In the end, the two lines decided on a "network" compromise. The emergence of these lines of research was a result of the fact that the research in these schools was closely linked to studies within other disciplines as well as colleagues with other functional orientations and can hereby be regarded as heterogeneous. The research was more problem driven than theory driven (Mattsson and Johanson, 2006). The lack of strict departmental specialization is also of great importance for the opportunity to be able to carry out research within this area.

The early research work on industrial networks focused mostly on understanding the nature of dyadic relationships based on the observation that both the buyer and seller are active, hence the name "interaction approach" (Håkansson 1982; Turnbull and Valla, 1987). In the next phase, the focus changed more towards understanding the dynamics and its development of dyadic relationships (see more in Ford, Håkansson and Johansson 1986). One of the main conclusions in the IMP-studies was that the dyadic relationship has to be seen in a larger context of interfirm relationships in order to understand the actions of the buyer and seller and the longitudinal development of the relationship (Olkkonen, Tikkanen and Alajoutsijärvi, 2000). According to the IMP-approach any company can be analyzed from a network perspective (Huemer, Becerra and Lunnan (2004). These theories evolved as an answer to identified research gaps. A weakness in earlier research was a shortcoming in explanations of how the micro-level interactions were connected to macro-level patterns (Granovetter 1973). Compared to

one-off transactions, the interaction in business relationships is critically influenced by the actors' behavioural modes of interaction and the actors' perceptions of the partners' trustworthiness (Andersen and Kumar, 2005).

During the last decades, relationships and networks have received a great deal of attention from both academics and practitioners. Strategists have been concerned with strategic networks and purchasers have discussed supply chains and supplier networks and the exchange between them. This seems to point out that there are changes in the way that companies relate to their environment. The focus of research in this area is this kind of organization form above the individual companies, which can be called networks. Conditions for companies are different if one sees them as isolated units rather than as actors in business networks. This view sets the focus and the base for research in business networks (Håkansson and Ford, 2002). There has also been growth in different forms of cooperation between organizations. These cooperating organizations form different kinds of networks, with different purposes. During the last years we have for example seen an increase in networks with different kinds of forms, for example project networks. These networks are different and, according to Ebers (2002), we need more understanding on network formation and on underlying motives for cooperation. Project networks are included in this study.

Business networks are defined in Håkansson and Ford (2002) as "a structure where a number of nodes are related to each other by specific threads" (Håkansson and Ford, 2002:133), and the interaction taking place in them. These business networks can be described as complex business markets, with nodes as business units and relationships as threads (Håkansson and Ford, 2002). A network can also be described as "a collection of actors (persons, departments, firms, countries etc) and their structural connections (familial, social, communicative, financial, strategic, business alliances etc)" (Iacobucci, 1996:xiii). A supply network is "the network of organizations that are involved, through upstream and downstream linkages, in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer", (Christopher, 1992:12). In business networks, the interaction is based on relationships between actors, which are part of the business network. When we

study these networks we can use the interaction model to study the dyadic relationship between two companies.

The theoretical frame for the thesis is based on the interaction model (Håkansson, 1982). The study especially focuses on certain elements of the model, i.e. adaptation and cooperation, which are parts of the relationship atmosphere in the companies' interaction.

2.1 Interaction in a network perspective

The theoretical frame for the thesis is based on the interaction model (Håkansson 1982). The study especially focuses on certain elements of the model, i.e. adaptation and cooperation, which are parts of the relationship atmosphere in the companies' interaction.

The earliest studies in this research area (Håkansson, 1982; Turnbull and Valla, 1987) started with a focus on *understanding the nature of dyadic relationships*, based on the observations that both the customer and supplier are active (**the interaction approach**). During the next phase, focus changed **towards understanding the dynamic development of dyadic relationships** (Dwyer, Schurr and Oh 1987; Ford, Håkansson and Johanson, 1986).

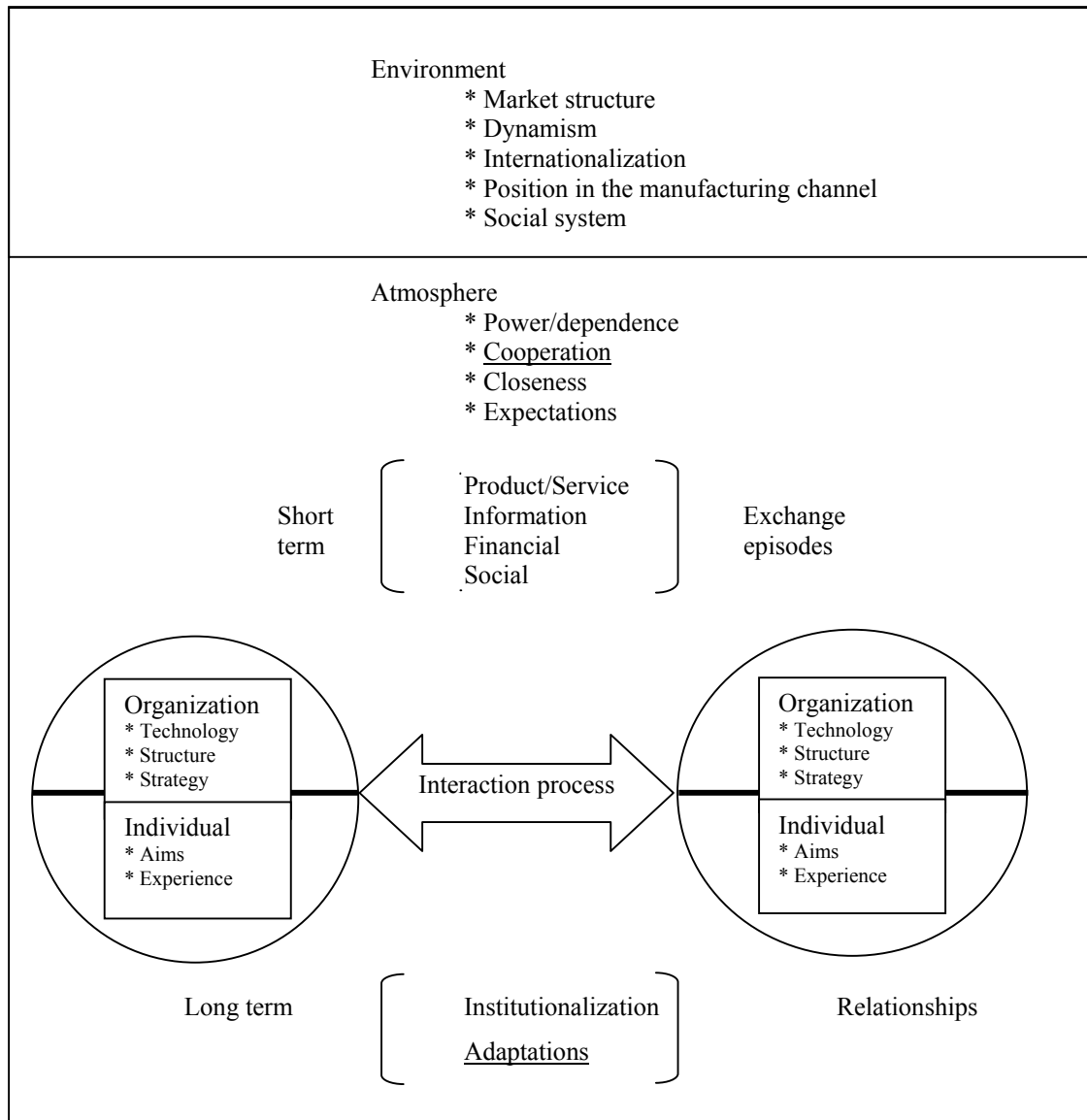
The network approach goes beyond the interaction approach (van Weele, 2005). Industrial markets are characterized by a high degree of mutual **interdependency**, and it is therefore essential that buying behaviour is analyzed as an **interactive** process. The interaction process between buyer and seller can be described in terms of the following characteristics:

- * The **number of times** the parties make contact
- * The **product** (the properties of the object of exchange)
- * The **degree of formalization** in the process (written record, rules and regulations)
- * The **characteristics** of the parties involved

The transaction process can be described in terms of the physical exchange and also based on these elements (van Weele, 2005). Researchers within this research area support the view that the relationship between the buyer and seller is influenced by the interaction, and not only by the characteristics of the product and the involved organizations.

This study focuses on adaptation and cooperation in business networks. These elements are included in the **interaction model** (Håkansson, 1982).

Figure 2 The interaction model



Source: Håkansson (1982)

When companies collaborate, all of the elements in the interaction model (Figure 2) affect the outcome. Issues of importance that affect the studied activities are, for example, dynamics, power/dependence and conflicts. Within the **interaction model** different elements are possible to use in order to analyze the mode, level and type of interaction taking place within and around cooperation activities.

The **interaction model** is suitable for analyzing the interaction in the industrial market between the supplier and buyer. This exchange can be short-term or long-term. The exchange between companies can be in the form of products or services, but also as information, or financial or social exchange. Among other things, the companies' position in the **environment** is studied. There, the position in the manufacturing channel is identified as a means of understanding the companies' different actions toward the other companies in the supply network. The environment can, for example, include information about environmental requirements and laws that the cooperation activity is continuously formed and affected by. The **atmosphere** affects the dyad of cooperative companies. There, the **power** and **dependence** factor, **expectations** and **closeness** are of importance. Power affects the behaviour of both the buyer and suppliers. Of importance in the **cooperative** relationship is also adaptation. That is one of the most important bonds that hold the companies together in the long-term relationship (Håkansson, 1982). The **institutionalization** of the market affects the motivation of developing relationships, and this also affects the firms' organization. **Adaptations** are important for many reasons; among others they strengthen bonds between the companies, make relationships more enduring and indicate space for change within a relationship (Johansson and Mattson, 1987).

2.2 Exchange, cooperation and competition within a network

In markets, exchange relationships are connected (Mattsson and Johanson, 2006). The area of exchange and cooperation in networks is well recognized within industrial marketing research (Axelsson and Easton 1992; Bengtsson and Kock 1999; Ford 1997, 2002; Forsström 2005; Gadde and Håkansson 1993; Håkansson 1982; Håkansson and Snehota 1995; Möller and Wilson 1995, Tidström 2006; Tikkanen, 1997). In today's business networks, the importance of cooperation becomes more important. Through cooperation, it is possible to gain market knowledge, competence, access to products, reputation, and other resources important for your business (Bengtsson and Kock, 1999). Earlier research has focused to a larger extent on vertical cooperation, between buyer and seller, but there has also been research into horizontal cooperation especially

within the area of project networks research and sales (see for example Hovi, 1995; Mattsson 1983; Nummela 2000; Sandhu 2005; Tuusjärvi 2003; Virtanen, 2002).

In a business network there is also a certain degree of competition. There can be competition between suppliers, and each actor has to defend its place inside the business network as well as on the market. In a network, companies also exist, side by side. Two companies can sell to the same buyer in a business network. They can compete as they compete for a share of the same market. In another situation, they can cooperate because of scarce resources. They can borrow each other's tools for the manufacturing of a product for the same focal buyer. A counterpart in one business situation can very well be a cooperation partner in another situation. As Håkansson and Gadde (1993) argue, cooperation, conflict and competition can exist – side by side. The different suppliers compete inside a network, but they can also cooperate in another situation. A counterpart can be a competitor as well as a customer. To be able to understand the whole business network, not only does one have to look at the relations between the focal company and its suppliers, but also the relations between the different suppliers. One can also conclude that as long as different parties exist (buyer, seller, competitor and co-operator) there will also exist different goals (Gadde & Håkansson, 1993).

There also have to be motives for the companies to cooperate and create value. In the atmosphere of business relationships, elements of cooperation and conflict have been found to co-exist. In a relationship, one does not have to straighten out conflicts and resolve everything once and for all. Håkansson and Snehota (1995) even consider some amount of conflict to be necessary in order to keep the relationship between two companies healthy. It is necessary though to have a co-operative attitude in order to avoid the danger that the relationship becomes a zero-sum game. What makes the relationship worthwhile for the parties is the result of cooperation and value creating (Håkansson & Snehota, 1995).

The focal firm is involved in several different relationships at the same time in order to defend its position in the business network (Bengtsson and Kock, 1999). The position of the focal firm is, to a large extent, affected by the power that it has over the other actors

in the network. By adapting and cooperating, the supplier can strengthen the relationship to the buyer and in this way better defend its position in the network. This will also create an atmosphere for more frequent exchanges and future cooperation between the actors.

Suppliers are positioned on different levels in a supplier network according to the size of their activities and resources (Cox, 1996; Gadde & Håkansson, 1993). Some suppliers are not positive toward cooperation with other suppliers. These suppliers mainly see the risks and drawbacks of cooperation as larger than the benefits of it. Short-term value is easier to estimate than the longer-term value that may be created during the time of a relationship with a collaboration partner (Wilson and Jantrania, 1997). Competitiveness in the long term for the company is dependent on the ability to cooperate and to be successful in the future network society (Raatikainen, 1992). In today's business world, it is difficult to cope alone.

According to Tsupari, Sisto, Godenhjelm, Oksanen and Urrila (2004), 40% of Finnish companies were involved in industrial activities in a partnership. Some types of companies are more involved in networks than others, and for example, big industrial firms and service companies are more integrated than companies in the construction industry. The reasons for seeking cooperation were the result of a lack of own resources, economies of scale and extended flexibility. The motives for cooperation were slightly different depending on which industry area the companies belonged to (Tsupari, Sisto, Godenhjelm, Oksanen and Urrila, 2004).

Cooperation may be of such strategic importance that the company may not get along without it (Vesalainen and Asikainen, 1993). One motive for cooperation is often that one wants to gain access to the resources that the counterpart has. All resources of a company are not valuable. The resources which have no value to any counterpart, remain passive and are not likely to be of any value to the company itself (Ford, Håkansson and Johansson, 1986). The interaction between companies concerns how to create supply and use of resources, where the value of the resources is dependent on

how the resources can be combined with other resources available (Håkansson, Harrison and Waluszewski, 2004).

Every business network of actors contains conflicting interests. Between the buyer and supplier there is always a problem of dividing. What one should aim at are relations where conflicts are handled in a constructive way. Gemünden (1985:394) is of the opinion that the "buyer and seller should neither smooth over existing conflicts nor let them escalate". The conflict is there as long as both parties are independent - they will never have identical goals. There is always a conflict of interest between the buyer and seller, while there is always the problem with dividing the profit of the common work. The problem with dividing is especially difficult when the common processing value is decreased. That is why the cooperation has to be developed in order to keep the common result at least at the same level as before. The only way to get working relations, on a long-term basis, is when involved parties work according to their own goals and interests, without forgetting that the other party has other goals and that it is also important to consider these as important (Gadde & Håkansson, 1993).

The different relationships that a company has in a business network are very important for its strategic actions. According to Bengtsson & Kock (1999), a mix of relationships with different content, both vertical and horizontal, is required. It is important to use the company's limited resources in the most efficient way. Cooperation can consequently be regarded as an effective way of being able to handle both competition and cooperation between competitors. According to Bengtsson and Kock (1999), there are three benefits of cooperation:

- 1) Costs for developing new products can be divided among cooperating firms
- 2) Lead times are shorter
- 3) Each firm can contribute with its core competence

The competitors are forced in this way, through competition, to further develop their products and carry out their activities in the most efficient way (Bengtsson & Kock, 1999). There are different advantages provided by the different relationships those

companies have. Small and medium-sized suppliers have a lot to gain if they interact with each other by creating partnerships, as their positions in the business network will become stronger. By establishing new relations and developing existing ones, a firm is able to use a network as a means of creating a “competitively advantageous position” (Skjott-Larsen, 1998) and create new capabilities by pooling resources together. One example of these successful customer-supplier partnerships is Toyota and its first-tier suppliers.

Relations in the industrial market can be beneficial for the supplier to invest in. According to Kalwani and Narayandas (1995), suppliers involved in long-term relationships with buyers are able to generate a higher profit than suppliers focusing on short-term exchanges. By creating and maintaining long-term relationships, the buyer will also reach a higher and more stable quality level instead of switching from one supplier to another (Holmlund and Kock, 1995).

The future trend is continuing toward a continuous outsourcing of the companies’ activities. It is argued that most companies cannot be at the cutting edge in all different areas, so they look for suppliers who can be strong in the areas where they themselves are weak (Gadde and Håkansson, 2001). This is where the suppliers need to meet the buyer’s demand. The actors adapt their resources to the next part of the supply chain and to the other actors in the network. The actors must compete to a certain extent in vertical relationships. The business network will otherwise not be effective. Cooperation is also needed, as the actors must invest in bonds and make adaptations in order to acquire long-term relationships (Bengtsson & Kock, 1999). Adaptations create a stable base for the efficient exchange in a relationship. It also makes it hard to use alternative sources as switching costs arise (Erbisman, Kock & Strandvik, 1998).

In business networks, cooperation is always based on previous experiences. The results and the outcome are based on earlier processes and episodes of interaction with other actors in the same network. Depending on the earlier episodes, the base is created for the next step in their relationship (Håkansson and Snehota, 1995).

The structure of business networks can vary during different cooperation conditions. This also reflects the atmosphere and the interaction between the parties. Business network structure can vary depending on the previous history and evolution pattern of the network. Different motives for cooperation can form the cooperation pattern and the readiness for adaptive behaviour. If there are problems in cooperation, this may also affect the trust and willingness to adapt. For example, a lack of trust in cooperation will affect the willingness to adapt. This hesitation may affect the dynamics and business in a negative way, as adaptation is necessary to take cooperation further.

2.3 Trust, power, emotions and commitment

When two companies cooperate, each episode or meeting will create the base for future interaction. The base for collaboration is founded on assumptions, trust and planning (Dwyer, Schurr and Oh, 1987). **Trust** is based on the actors' past performance as well as reputation. It is also based on personal friendship and social bonds, and it is established in a day-to-day interaction. It is tangible and gives a sense of belonging and interdependence.

Mutual **trust** is more likely than one-way trust (Anderson and Weitz, 1989:312). According to Zaheer, McEvily & Perrone (1998:143), trust is "the expectation that an actor (1) can be relied on to fulfil obligations, (2) will behave in a predictable manner, and (3) that he/she will act and negotiate fairly when the possibility for opportunism is present". According to Anderson and Weitz (1998: 312), trust is defined as "one party's belief that its needs will be fulfilled in the future by actions undertaken by the other party". Both definitions agree that the feeling of trust is directed towards the future and that it creates the base for action and exchange. One of the problems with trust is the asymmetry of organizations and the fact that there is not much time for the natural development of trust (Blomqvist and Ståhle 2000). It is possible to choose with whom you cooperate. In order to cooperate successfully, one needs trust between the interacting parties.

Emotions play a crucial role in the initiation and the development of a relationship (Andersen and Kumar 2005). Trust is developed over time, and each episode in the parties' exchange sets the base for the future development of the relationship. As the trust increases, the relationship develops further into a deeper understanding of both parties' needs. Emotions also have a direct impact on the behavioural interaction (Andersen and Kumar, 2006), and in order for further investments in the relationship, there needs to be trust. Trust can be represented at both interpersonal and interorganizational levels (Zaheer, McEvily & Perrone, 1998). A company can gain advantages by pursuing closer relationships and the first is the development of mutual trust, which is the foundation of all strong relationships (Moncza, Trent and Handfield, 2005). When the parties' cooperation continues, it leads to trust, which in turn leads to an increased willingness to continue cooperation in the future, which generates greater trust in the future (Anderson and Narus, 1990). Adaptations also generate trust and mark commitment (Ford, 1982) and it can be seen as a key factor in advancing and maintaining a relationship (Halinen, 1994).

It is also essential to include **power** when studying a network. Power is, according to Thorelli, the central concept in network analysis. He defines power as follows: "the ability to influence the decisions or actions of others" (Thorelli, 1986:38). Power affects the behaviour of both the buyer and suppliers. The buyer safeguards his interests by establishing control over the supplier's operations. This vertical control prevents his assets from being expropriated (Heide and Johnson, 1992). Many suppliers are really unprotected against the opportunism of the focal buyer. Wathne and Heide (1999) studied opportunism in different relationships and how one can manage this behaviour. It is not, in their opinion, possible to completely manage or eliminate opportunism. It is instead better to set up a tolerance limit for the opportunistic behaviour and try to cope with that. There are many different ways that suppliers can improve their own power and reduce the opportunism that they suffer from.

Power exists in a relationship where there is dependence. This dependence is often unequal and one explanation is the difference in size between the companies (Grant, 2002). Power and dependency is often associated with acquired resources and the party

with more resources has more power. Power affects the behaviour of both the buyer and suppliers. Adaptation can take place because of pressure from the buyer, but it can also be carried out voluntarily, as an expression of commitment or as an adaptation towards standards.

Business network connections influence the relationship commitment directly (Blankenburg, Eriksson and Johansson, 1996). Much of a company's evaluation of a customer or a supplier during the development of their relationship will be based on their **commitment** (Ford, 1982). According to Dwyer, Schurr and Oh (1987:19), this can be defined as "an implicit or explicit pledge of relational continuity between exchange partners". The party's commitment is, to a great deal, affected by the perceived commitment of the other party (Anderson and Weitz, 1992; Halinen, 1992) and the commitment experienced by one individual may differ markedly from the others' experience (Reichers 1985). Effort and a will to reduce social distance is a way for the supplier to demonstrate commitment. Showing commitment in the form of adaptation shows that one is willing to invest in the future.

2.4 Adaptive behaviour within business networks

During recent years, the business relationships between a buyer and a seller have more and more been characterized by new forms of cooperation. This implies cooperation in the sense that companies work closer together; they are connected in newer ways than before. In today's business world, suppliers, for example, deliver onto the shelves of the customer's warehouse or are connected directly with the customer's computer system. Companies have always cooperated, but today they cooperate in new ways. When companies interact and cooperate with other in a supply network they adapt to a larger or lesser degree. By analyzing the motives for adaptation, both practitioners and academic researchers can learn more about activities in business networks, and what consequences the chosen behaviour will have for the involved companies.

According to Hallén, Johanson and Seyed-Mohamed (1991), adaptation is of significant importance in the dynamics of a business relationship, due to the fact that most business

relationships are based on some kind of match between the operations of two firms. Adaptation is also an important element of dyadic business relationships as well as an important element in different business networks (Brennan and Turnbull, 1998; Håkansson and Snehota, 1989). Johanson and Mattsson (1987) distinguish between five different kinds of adaptations; these are technical, logistical, administrative, financial, and knowledge adaptations. If a company adapts technically to another company, it modifies, for example, products and production processes. Logistically, a company can adapt to another company, for example, by adjusting stock levels or developing common delivery systems. Administratively, companies can adapt by modifying administration routines. Some companies also adapt financially through payment routines. Another way of adaptation, for example, can be through knowledge adaptation while working together when developing new products. Gadde and Håkansson (1993) mention technical, administrative, financial and knowledge adaptations as well as legal adaptations and Fang (2001) adds the cultural one. One can also analyze adaptation as five metaphors, i.e. as an investment process, a decision-making process, a political process, a socialization process, and as an evolutionary process in the process of adaptation (Brennan and Turnbull, 1996). Together, these metaphors provide a complementary process view of the adaptations in the buyer-seller relationship.

Brennan and Turnbull define adaptation as follows: “Buyer-seller adaptations are defined as behavioural or structural modifications, at the individual, group or corporate level, carried out by one organization, which are initially designed to meet the specific needs of one other organization” (Brennan and Turnbull, 1998:31). Adaptations are perceptions and they are based on one individual’s perception of another individual or collective behaviour, which is pointed towards their own company. The perception is always based on earlier episodes in the relationship.

Research within the area of adaptations has shown that adaptive behaviour is not unusual. Two decades ago, the importance of adaptations was acknowledged in the European study of relationships on the industrial market (Håkansson, 1982). A number of researchers have analyzed adaptations in different ways.

Table 1 Classifications of adaptations used in prior studies

Study	Classification of adaptations	
Håkansson (1982)	Supplier and customer adaptation of:	
	Product specification	Delivery procedures
	Product design	Stockholding
	Manufacturing process	Administrative procedures
	Planning	Financial procedures
Turnbull and Valla (1986)	Customer adaptation of:	Supplier adaptation of:
	Product	Product
	Manufacturing process	Manufacturing process
	Payment terms	Payment system
	Production planning	Stocks and deliveries
	Delivery	
	Stocks	
Hallen et al. (1991, 1993)	Customer adaptation of:	Supplier adaptation of:
	Product	Product
	Production process	Production process
	Production planning	Stocks
Holmlund and Kock (1995)		Supplier adaptation of
		End product
		Information routines
		Payment routines
		Inventory
		Production process
		Production planning
		Administrative routines
Cannon et al. (2000)	Customer adaptation of:	
	Product features	
	Personnel	
	Inventory and distribution	
	Marketing	
	Capital equipment and tools	
Brennan, Turnbull & Wilson (2003)	Supplier and customer adaptation of:	
	Production planning and scheduling	
	Stockholding and delivery	
	Product	
	Information exchange	
	Production process	
	Financial or contractual terms and conditions	
	Organization structure	
	Other	

Adapted from Brennan, Turnbull and Wilson (2003).

Analyzing adaptations by classification of adaptation is a way of becoming aware of which kinds of adaptations are made. Becoming aware of these adaptations facilitates the work on a strategy. Analyzing adaptations, dependencies and the existing strategy provides the company with feedback on the existing situation in the dyad between the buyer and seller. Classifying and analyzing increases the awareness of the power-dependence structure.

The described classification shown in Table 1 presents resemblances when previous adaptation studies are compared. The *customer side* was represented in five of the studies. *Product* features were mostly studied, as for example production process, product planning and scheduling, product design or product specification as well as manufacturing. *Stockholding and delivery*, inventory and distribution, organization structure, as well as marketing and personnel issues were also represented areas. Information exchange was only included in the newest study (Brennan, Turnbull and Wilson, 2003), as well as financial, capital and contractual terms and conditions. The *product* was also adapted on the *supplier side* in all of the studies, as well as manufacturing, stocks and inventory. Administrative routines were also adapted, as well as financial and payment procedures.

The classification needs to be developed as changes and new demands take place in the relationship. Over the last decades, there has been an increased focus in business life on, for example, quality, purchasing and environmental issues.

Organizations respond to the demands placed upon them by other organizations and formulate their own actions (Pfeffer and Salancik, 1978). One of the choices a company has to make is the level of adaptation. This implies a chosen level of adaptation in their product and production process, in logistics as well as administration, quality or R&D. They can also choose not to adapt at all. After adaptations are made, the bonds between the companies will be tighter and have different consequences for the involved companies. Adaptation by the supplier usually implies more dependence on the buyer,

but not always. A supplier can also have power over the buyer, for example if the resources the company possesses are very unique.

Traditionally, the buyer-seller relationship has been characterized by power. According to Thorelli (1986), power is one of the central concepts of network analysis. The company with more power has the ability to influence the behaviour of the other. Adaptations may be a result of forced behaviour and the unequal power-dependence structure between the companies in the relationship.

Vesalainen (1995) studied the small firm sector in Finland and focused on dynamics and adaptability among these firms. The overall aim of the study was to increase the understanding of the survivability and adaptation of these firms. Different types of small firms could be identified. None of these types seemed to be superior compared to the others, in terms of survivability, but the way they adapted varied to a great degree. All types of firms were adaptable, but especially the conservative micro-firms adapted mainly through operative adjustments. The more entrepreneurial-oriented firms adapted according to a much wider range.

Halinen (1994) discusses in her thesis the difference between adapting and investing in a relationship. According to Halinen, to adapt is to passively respond to the requirements of the other party or to the demands of a contextual setting or the changes in it. If a company invests in a buyer-seller relationship, then it can be seen as actively making the relationship more beneficial as the resources are adapted or changed (Halinen, 1994). Adapting or investing in a buyer-seller relationship shows the level of commitment of the active party. One can see the level and choice of activity in these processes as signals of different motivation levels of the acting company. When the company chooses to invest, the motivation level is higher than when it just adapts (Halinen, 1994).

The benefits from closer involvement should offset the investments needed for the relationship (Araujo, Dubois and Gadde, 1999). Adaptation is needed in order to develop the relationship between the buyer and seller and take it further as far as the

parties agree. It can be seen as glue, which keeps the parties together. It has been argued that adaptations are needed. Adaptation, however, should be the result of a conscious choice. Adaptations are important and they exist for a reason.

2.4.1 Motives, benefits and drawbacks of adaptations

Why should anyone adapt? Is it beneficial? Adaptation is, according to Nummela (1997), the result of change. The more dramatic changes, the more one adapts. Organizations respond to the demands placed upon them by other organizations and formulate their own actions (Pfeffer and Salancik, 1978).

The adaptive behaviour can be formal or informal, and an important indicator of commitment (Håkansson, 1982). When analyzing adaptation one can conclude that there is a wide range of adaptive behaviour. What then are the similarities? Can one see the same motives in these relationships?

According to Dubois and Håkansson (1997), adaptations are a necessity for maintaining or developing a relationship. The **motivation** for adaptive behaviour is more significant if the difference between the parties is large, i.e. the adaptation will be in a direct proportion to the differences that exist between the parties (Gadde and Håkansson, 1993). Adaptation to demanding customers can also **strengthen** the suppliers' competitive position since the result is superior products or production systems (Hallén, Johanson and Seyed-Mohamed, 1991). It is possible for the supplier to reach higher profits by maintaining long-term relationships (Kalwani and Narayandas, 1995). Adaptations make companies more dependent on each other and they strengthen the bonds between the companies (Johansson and Mattsson, 1987).

There are also **risks** connected with adaptation. The **dependence** on the buyer increases. The possibilities of finding new counterparts decrease if a company invests extensively in adaptations (Erbismann, Kock and Strandvik, 1998). From the buyer's point of view, it is not recommendable to control the supplier too tightly. Binding up a supplier too much limits both creativity and innovation (Gadde and Snehota, 2000). The investments

connected to adaptations can be considerable and they cannot be transferred (Hallén et al., 1991).

2.4.2 Adaptation and strategic management

One of the important tasks for management is to cope with change. According to Hrebiniak and Joyce (1985) determine the strategic choice and the interaction with the environment the adaptation. By choosing an appropriate strategy the manager can design a matching structure for the firm in order to be fit for an ongoing change. Strategic management can be defined as “the process through which a manager ensures the long-term survival and growth of a firm” (Chakravarthy, 1982:35). Strategic management is needed in order to cope with internal and external processes and one of the primary purposes of strategic management is adaptation. (Chakravarthy, 1982)

During the last decades, the view on adaptations has become more complex. The view of adaptation is that it makes the relationship more enduring, but it might also make the company more dependent (Brennan and Turnbull, 1999). Adaptations are made by individuals or at the corporate level, and the framework for adaptations can be created as part of the organization’s strategy. Adaptive behaviour can be conscious or unconscious, but it is an important tool to be used in a conscious way in order to reach the organization’s goal. Extensive adaptations cannot be made towards all companies. Adaptations are resource intensive and the company should focus their extensive adaptations towards the most rewarding relationships. Adaptation can be seen as an active strategic investment into the relationship with another company (Hagberg-Andersson, 2006). More studies and guidance are needed in terms of strategic behaviour and adaptation.

When planning the company strategy, it is difficult or even impossible to know the future. It is often suggested that companies should focus on their core competence. It is difficult, however, to know what will be a profitable “core” or business in five years time (Jarillo, 1993). It is, however, worthwhile to include and analyze interaction with other companies within the company strategy. Jarillo (1993) discusses the confusion

over being too much or too little integrated with other companies, and the effect it has on efficiency. The integration and exchange should be carefully planned and regularly monitored. This also comes to adaptation and the way it is strategically handled.

Adaptation has been classified into formal and informal adaptation (Håkansson, 1982). Formal adaptation that takes place between the interacting parties may be conditioned by technology, industry norms or the market (Ford, 1982). The informal side of adaptation is more on the mental side and is the result of ongoing interaction between the parties and their needs. It also shows commitment and it expresses a will that the relationship should continue. The commitment is based on the earlier episodes in the relationship, so it is always based on the history of the relationship. Based on the present situation, it will also affect the future history of the relationship. According to Håkansson (1982), informal adaptation is a major indication of commitment over and beyond the contractual adaptations.

Canning and Hanmer-Lloyd (2002) studied impediments to the adaptation process and they concluded that managers are acting in their own interest, and if no clearly identified benefits will result, no adaptation will occur. No adaptations are either to occur if the perceived risk is too big and self interest may also count more than mutual gain. When a company is slow to carry out changes that have been agreed upon, this might act as a sign of an unreliable and uncommitted company. This may reduce a partner's motivation to carry on cooperation (Canning and Hanmer-Lloyd, 2002). Positions in cooperation are balanced between the past and the future (Easton, 1992). Every company has a position in the industrial network, and a company can affect its current and future position in the network by adapting strategically.

The series of interactive events, activities and stages lead to change (Canning and Hanmer-Lloyd, 2002). Change can imply increased strength or increased weakness, but both change and adaptation implies chances for something new with unexpected possibilities. Adaptation can be seen as a negotiating process with information exchange, commitment and execution phases (Canning and Hanmer-Lloyd 2002). Every business activity, as for example adaptation, which can improve a company's

competitive advantage improves its chances of staying in the market tomorrow as well. Planning the adaptive behaviour can increase the firms' benefits.

Granovetter (1973) stressed that there is a shortcoming in explanations of how micro-level interactions are connected with macro-level patterns. Research in the area of adaptation has stressed the importance of this phenomenon and it has also identified a gap to be filled by future research (Brennan, Turnbull and Wilson, 2003; Canning and Hanmer-Lloyd, 2002). Competition between business networks becomes more intense and the importance of friction-free cooperation and adaptation increases. Adaptation is of importance as companies increasingly need to be connected in order to decrease the distance and work more closely with each other, i.e. to create knowledge and value, save time or improve quality etc. The area needs to be developed in order to generate new insights.

Based on this study, a new definition of adaptation is being proposed:

Adaptations should be regarded as offensive or defensive modifications, carried out by one or two parties to meet the needs of one's own or another individual or organization.

The above described modifications are mental or concrete modifications, not a behaviour, as in the definition by Brennan and Turnbull (1998). It is stressed that adaptation is a *perception of a studied behaviour*, one's own or someone else's. The earlier definition by Brennan and Turnbull defines adaptation as something that can be observed, but one should also stress the fact that adaptation in the beginning is a mental process that is not an observable behaviour until later. The definition puts more focus on the outcome of the process than earlier definitions. It also stresses the consequences of adaptation in order to put more focus and weight into this area.

3 EMPIRICAL RESEARCH DESIGN

In this chapter the research strategy, the data collection and the description of the research process will be discussed. First the research strategy will be discussed from an epistemological and ontological point of view and then the research process will be discussed.

3.1 Research strategy

In this chapter the research strategy of the study is described. In research, it is essential to explain the different choices that have been made during the different stages of the study. The researcher approaches the research process with a set of ideas and a certain amount of pre-understanding. The theory can be described as the ontology and the questions as the epistemology (Denzin and Lincoln, 2000). This will be discussed and described in the following subchapters.

3.1.1 *An epistemological point of view on the study*

Traditionally, research has been perceived as objective and true knowledge (Alvesson and Sköldbberg, 1994; Wallen, 1993). Since the 1960s, there has been an ongoing discussion about how objective research is. It has been argued that data or facts are the constructions and results of interpretation. Scholars firmly rooted in the ethnomethodological tradition criticize the use of any method as a tool, seeing that methods instead are practices that produce verifiable findings for any given paradigm (Denzin and Lincoln, 1998). A paradigm can be seen as a way of approach, which is affecting all thoughts and actions as good role models, rather than rules. The paradigm is often unmentioned (Wallen, 1993).

Ontology is the assumption about how the world really looks like, and a real belief that the empirical world can only be studied empirically in a limited way. Within ontological debates one can discuss if people really act rationally, and if they really choose their

actions from an evaluation of something other than emotions, norms etc (Jacobsen, 2002).

Epistemology concerns questions about knowledge and the basis for our knowledge and how we actually know something (Bergström and Boréus, 2000). Epistemology is the philosophical basis for claiming to know what we know and very few researchers show any concern with or interest in epistemology (Easton, 1998). According to him, case study research is the most appropriate methodology for industrial networks as a research area and that there exists an epistemological defence for this. According to Easton (1998), four key epistemological orientations can be identified in social research, i.e. **positivism, realism, constructivism, and conventionalism**.

A lot of criticism has been pointed toward **positivism**, where it was argued that all research is based on neutral observations (Alvesson and Sköldbberg, 1994). The positivism has a special ontological view, that the world can be described with the help of laws and that data can be gathered from an objective reality (Jacobsen, 2002). Positivism is a belief in the rationality of science (Wallen, 1993). The **realist position** is about seeking explanatory knowledge. According to this fundamental assumption, the reality is out there waiting to be discovered. **Constructivism** represents a set of beliefs that the knowledge of the world is constructed. **Conventionalists** reject realism (Easton, 1995).

This study on adaptations is focusing on in which ways, to which extent and why adaptation and cooperation take place in the studied networks. The study also tries to answer what the consequences are for the studied behaviour. Based on this, one can say that the realist position is the chosen path that leads to the understanding of the phenomena. The realist position suits the framework of the study to some extent. The critical realists agree that the events of the world are observable and with the constructivists that knowledge is socially constructed and made up of feelings and their interpretations of the world (Denzin and Lincoln, 2005). According to Easton (1995), the studied object within the industrial networks is quite hard to define, and this also

covers the phenomenon of adaptation. Adaptation is hard to measure, hard to grasp and difficult to describe.

3.1.2 *An abductive approach*

In research, different approaches can be used. If one wants to identify theories and ideas to test, one can use a **deductive** approach, where we draw conclusions through logical reasoning (Arbnor and Bjerke, 1997; Ghauri et al., 1995). Afterwards, it is possible to further develop the theoretical and conceptual framework, using the data gathered. If one wants to use the **inductive** approach, one first has to explore the data and develop theories from it that can afterwards be related to literature (Arbnor and Bjerke, 1997; Saunders et al., 1997). Induction may be seen as the first step in scientific methods (Ghauri et al., 1995). **Abduction** is a kind of combination of the two previous approaches with new elements added along the way (Alvesson and Sköldbberg, 1994; Dubois and Gadde, 2000). As a base for this study, a literature study was done, in order to identify ideas and to build up a theoretical frame for the study.

It has been suggested that research into adaptation is needed, as in previous decades scholars have neglected this research area (Brennan, Turnbull and Wilson, 2003). Therefore, one could argue that the approach for this study could have been done inductively. Induction means that the researcher starts by observing the reality and afterwards creates the theory (Jacobsen 2002; Wallen, 1993). The other alternative is to first do a theoretical study and then do the study (Jacobsen, 2002). In recent decades, however, adaptation has been discussed to some extent and this argues that a deductive approach could have been possible. However, the research process in the study has been an abductive one, as in line with the arguments by Dubois and Gadde (2000). They describe the abductive approach as a process where the researcher continuously moves between theory and the empirical world. The main objective of any research is to confront theory with the empirical world, and within the abductive approach this is continuous throughout the research process (Dubois and Gadde, 2000).

In this study the first step was to gain a theoretical pre-understanding, by doing a literature review. After this, the questionnaire for the pilot study was drafted. After the results of the pilot study had been collected and analyzed, the interviews were conducted for the interviews at the focal buyer. After these interviews were done and analyzed, the questionnaire for the final survey was made. After the questionnaires were returned and the analyses started, the interviews for the calibration case were made, followed by the interviews for the furniture case. During this whole process, the researcher moved back and forth between theory and the empirical world, in order to expand their understanding of both the theory and the empirical phenomena. The abductive approach is developed by researchers within the network approach.

Five major research strategies are used in social sciences: surveys, case studies, archival analysis, experiments and histories (Yin, 1994). Robinson (1993) in Saunders et al., (1997) lists the three traditional research strategies as experiments, surveys and case studies. In addition to these three traditional strategies, there are two other important ways of pursuing research: cross-sectional and longitudinal studies (Saunders et al., 1997).

3.1.3 Choice of method

According to Ghauri et al. (1995), the **choice of method is dependent upon the research problem, the research design and the purpose of the research**. Research methods refer to the systematic, focused and orderly collection of data for the purpose of obtaining information from it, in order to solve or answer our research problems or questions. Methods are different from techniques of data collection. **By methods, data collection is meant** through historical review and data analysis, field experiments, surveys and case studies. **Techniques are a step-by-step procedure**, which is followed by gathering and analyzing data to find the answers to the research questions (Ghauri et al., 1995).

Qualitative and quantitative methods can be combined and used in the same study (Ghauri et al., 1995). The difference is in procedure and what is emphasized. According

to Reichardt and Cook (1979), in Ghauri et al. (1995), the emphasis in qualitative research is on the understanding of the phenomenon. The objective is to get close to the data and to obtain an “insider view” of the studied problem. The focus is also on getting the informant’s/respondent’s point of view. Qualitative methods are also more process oriented (Ghauri et al., 1995).

Quantitative methods are more result oriented. The emphasis is also more on testing and verification. While the focus on qualitative methods is on understanding, with quantitative methods the focus is on facts and/or reasons for social events. When qualitative methods are used, the observations are made in their natural settings, while a controlled measurement is in focus in quantitative methods. The aim is also to obtain an objective “outsider view”, distant from the data (Ghauri et al., 1995). The use of structured interviews, where standardized questions are put to all interviewees, also falls into the category of surveys (Saunders et al., 1997). According to Creswell (2003), a mixed method is best when one wants to include and capture the best of both qualitative and quantitative approaches.

When adaptations are studied, it is important to remember the existence of power. Power affects the view of adaptations and answers are coloured because of this. If one wants to obtain an answer to “how” questions, a case study (qualitative) is a good method (Yin, 1989). Qualitative research has focused more on social processes (Ghauri et al., 1995). If adaptations are studied in a case study, one obtains an answer to how the parties adapt. According to Eisenhardt (1989), case studies are especially relevant in a new research area, where quite little is known about the phenomena and where existing theory seems inadequate.

As a research area, adaptation is quite broad. For example, technical adaptations can be quite different to study, compared to knowledge adaptations. The respondents can be more aware of some adaptations than others. Technical and financial adaptations are quite visible, while knowledge adaptations, for example, are not so easy to grasp.

Research into adaptations often studies perceptions of adaptations. By using personal interviews, the interviewer can become “behind” the answers. The interviewer can ask about the recent history in the relationships with the other party. It is also possible to get to know more about the power balance and so on. By using a survey method, it is not possible in the same way to obtain additional information about feelings and the reasons behind the answers. However, it is possible to compare and check different questions in a survey to each other, and in that way gain additional information. In personal interviews, one can note hesitation, feel the atmosphere and also ask the respondent why he or she does not want to answer certain questions. When questions are left unanswered in a questionnaire, it is often quite hard to know the reasoning behind it.

Studying adaptation means taking a snapshot of the process at a particular time. One could argue for a longitudinal approach, but studying this phenomenon at a particular time is also a study of past episodes as well as the present situation.

All methods within social science have received criticism (Alvesson and Sköldböck, 1994) and one criticism mentioned is the “method effect” (Saunders, Lewis and Thornhill, 1997). By this is meant that all methods used have different affects on the study and results. This is why it is beneficial to use multi-methods in the same study, in order to be able to compare the results. Using multi-methods enables triangulation and this refers to different methods in data collection within one study in order to ensure that the data is telling you what you think it is telling you (Saunders et al., 1997).

The selected research approach in earlier IMP-studies has often been **qualitative**. **Quantitative** methods have also been used, for example in Håkansson (1982) and in Turnbull and Valla (1987). Many of the studies under the IMP-umbrella have aimed at understanding the nature, dynamics and development of dyadic relationships; the method preferred has been the qualitative approach.

If one uses both methods, what are the benefits and drawbacks? Do they support each other?

What one first of all has to ask oneself is what kind of questions need to be answered. If one wants to know the answer to how the parties have adapted, then a qualitative case study is suitable. If one wants to know how much the parties have adapted, then a survey is appropriate. “How” and “why” questions are likely to favour the use of case studies (Yin, 1994).

A weakness in using both methods is that a pre-understanding of the problem might increase to the degree that it might interfere with the researchers’ view of the phenomenon. By approaching the problem from different angles, the pre-understanding increases and this may affect the researchers’ way of asking questions and structuring the next step of the study. This “evolution” might be regarded as both a weakness and strength, but the fact remains that it affects the pre-understanding of the studied behaviour.

By using both qualitative and quantitative methods, it is possible to gain a broader view of the phenomenon. Different methods may also be suitable at different times when a phenomenon is studied. A case study may be appropriate as a pre-study and it is possible to obtain a picture of the most important issues. When the results are analyzed, the next step might be a survey. An answer to the “how” question can be reached by single or multiple case studies. After the results of these case studies are analyzed, a larger survey can answer the “how much” questions. A survey allows the collection of data from a sizeable population in a highly economical way (Saunders et al., 1997).

There are two major advantages in using multi-methods in the same study. First, different methods can be used for different purposes in the study. The second advantage is that it enables triangulation, i.e. the use of different data collection methods within a study in order to ensure that the data is telling you what you think it is telling you (Saunders et al., 1997).

Adaptations are a part of the atmosphere, which is shaped in the interaction process. Adaptation has been studied both qualitatively and quantitatively. When one studies adaptive behaviour, it is important to remember that the respondent's view of their own

and the other party's behaviour is coloured by their own perceptions. It is hard to find the exact reality about adaptive behaviour. It is therefore important to study both parties in the dyad in order to obtain both sides' view of the activities. In this way it is possible to become closer to the reality. There is a tendency to classify what the other party does as “nothing more than what should be expected” and what one’s own company does as “above and over normal expectations” (Brennan and Turnbull, 1999). It is important to compare the respondent's view of perceptions of adaptation with the other party's view on the same adaptive behaviour. In this way, both parties’ perspectives can be taken into account.

The methods are not an end in themselves and they should be used only as tools for the analysis (Eggeby and Söderberg, 1999). Arbnor and Bjerke (1997:9) describe methods as "guiding principles for the creation of knowledge". The first and most important question when choosing and analyzing different research methods is to identify what the research questions are (Yin, 1994). Certain questions demand certain methods. By using both qualitative and quantitative methods, one can conclude that they may interfere with each other, which may result in an increased pre-understanding of the studied phenomenon. This may be regarded as both a benefit and a drawback. This may also affect the way the researcher approaches the problem by using another method in the next stage of the study (for example, in structuring a survey after a pre-study where a case study with personal interviews has been carried out).

One of the largest problems in adaptation studies is that the perceptions of adaptations are coloured and affected by power. When power is involved, feelings are also involved and feelings are hard to study. By using personal interviews they are easier to grasp. The parties can claim that they do not adapt that much, because the other party exercises power over them. If a supplier feels too dependent on a buyer then the answers might be coloured by negative feelings because of the feeling of being too dependent on the buyer. A supplier can, for example, be financially very dependent on a buyer. When one studies technical or logistical adaptations though, these are more neutral and might more easily be studied by using both surveys and personal interviews.

The results achieved in a study will be affected by the methods used and it is impossible to ascertain the nature of the effect. All different methods have different effects and it is good to use different methods in order to cancel out the “method effect” (Saunders et al., 1997). Different methods are appropriate for different reasons and might also be appropriate at different times. Interviewing an informant about somewhat sensitive topics like adaptation, power and dependence can result in more information than asking about the same topics in a survey.

By combining both qualitative and quantitative methods, it is possible to gain access to information on several levels. In order to obtain information about adaptive behaviour, it can be fruitful to combine several data sources and compare the results. The respondents can provide different types of information about the same phenomenon, and by combining the answers, the researcher can become closer to the reality. By studying adaptation quantitatively, by using a survey, it is possible to achieve results that are measurable. But the phenomenon in itself may not always be measurable because of the fact that adaptations are always a perception of someone’s opinion.

While studying the adaptation phenomenon, one can use several approaches. If one wants to study **how much** companies adapt, a survey is appropriate. In quantitative research, the emphasis is more on facts and/or reasons for social events and the aim is to receive an objective outsider view, which is distant from the data (Ghauri, Grønhaug and Kristianslund, 1995). In adaptation studies, one can also argue for a case study approach, as measuring this phenomena is not precise as a process. Quantitative studies emphasize measurement and analysis of causal relationships between variables, not processes (Denzin and Lincoln, 1998).

One of the purposes with this study is also to find an answer to **how and why**, i.e. the **consequences and motives why** the companies adapt and cooperate. In such a case, it is appropriate to use a qualitative case study (Yin, 1989). Case studies are also good to use in new research when more needs to be known about a phenomenon and where existing theory seems to be inadequate (Eisenhardt, 1989). This is the case with

adaptation and structured and unstructured networks. These are areas where existent theories need to be broadened.

Using different methods in a study increases the validity (Yin, 1994). In the included papers, multi-methods have been used. This enables triangulation, i.e. the use of different data collection methods within a study, in order to ensure that the data is telling you what you think it is telling you (Saunders et al., 1997).

Research into adaptation and cooperation is often a study of a mix of facts and perceptions. It is coloured by earlier episodes in the relationship, both good and bad. It is also coloured by power and dependence to the other party. This is also why it is good to use two methods when one studies these phenomena. By using both qualitative and quantitative methods it is possible to receive both facts and perceptions from different angles. In this way, it is also possible to come closer to reality and create a picture.

3.2 Data collection and description of the research process

The thesis was a part of the Win-Win Ostrobothnia project. Two doctoral students were part of the project. Sara Åhman drafted the questions for the interviews in the pilot study and were also part of the first interviews in the autumn of 1998. I joined the Win-Win project in the autumn of 1998 and began full-time in January 1999. Some of the interviews were a joint effort and some of them were conducted separately. Some interviews were also carried out by Marlene Långskog, our research assistant at the beginning of the project.

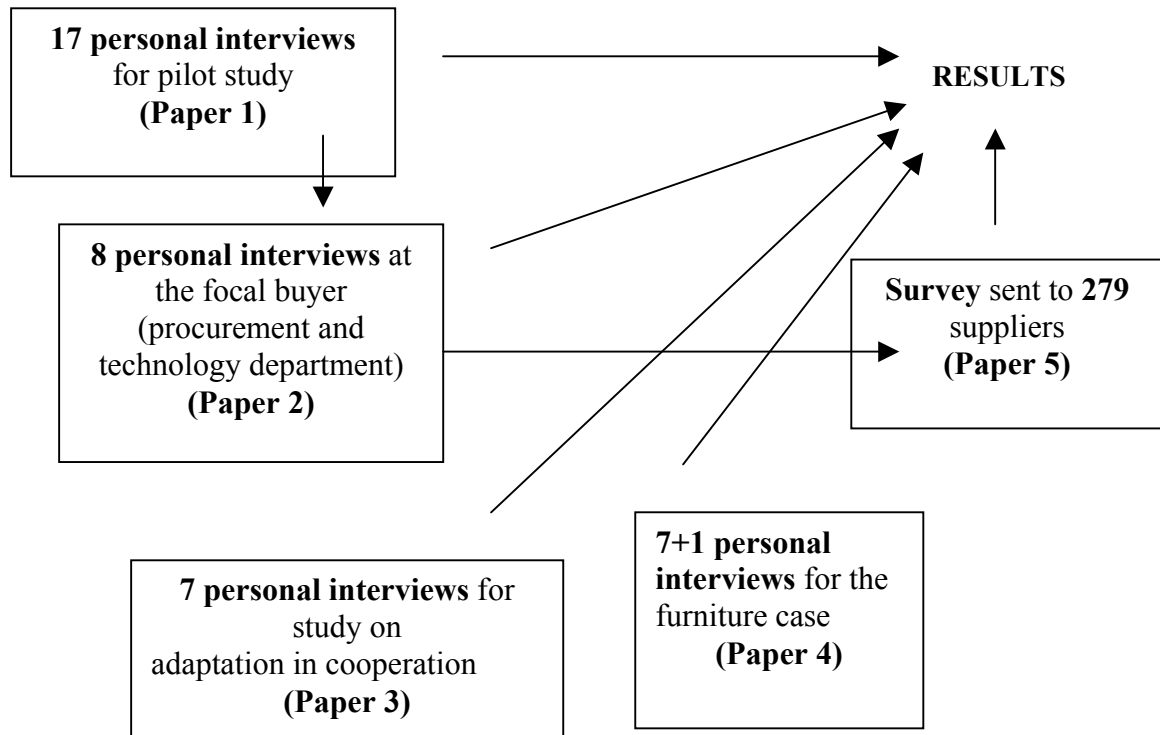
The aim of the Win-Win project was to analyze the relationships between a buying multinational company and its small- and medium-sized supplier network. The goal was to develop a program in order to strengthen the bonds and create an atmosphere for more frequent exchanges. The buyer is hereby able to strengthen his international competitive advantage and at the same time the suppliers can strengthen their position towards the buyer and international competitors. Stable and long-term relationships between the buying company and the domestic suppliers are not possible without strong

relationships. Otherwise the suppliers are easier to replace at short notice as domestic and foreign competitors may enter the supply network as neither adaptations nor investments have been made.

The analysis of the pilot study was carried out collectively and resulted in an article presented at the IMP 1999 conference. The interviews at the buyer were also carried out together and resulted in an article presented at the IMP 2000. The drafting of the questionnaire was performed together as well as the work associated with it. The idea was to create advantages for collecting data together. The basic questions did not have to be asked several times. The basic questions in the questionnaire were also used by the two PhD students for each thesis. The joint Paper 2 is focused on the buyer perspective, which is the main focus area of the other PhD student in the project.

The first phase of the project started in the autumn of 1998 and included a qualitative **pilot study** of personal interviews with 17 small and medium-sized suppliers of the focal buyer in the metal industry (Figure 3). The second phase of the project included **personal interviews** in 2000, with 8 respondents in the procurement and technology department at the focal buyer. The third phase of the project included a **survey** in 2001, and it was sent to all 279 suppliers of the focal buyer.

Figure 3 Data collection for the papers included in the study



The project included several stages of data collection (see figure 3), both qualitative and quantitative. In the first phase, the pilot study, the basic data was collected through personal interviews, from the group of selected suppliers. These were situated geographically close to the buyer. These interviews later formed the basis for the interviews at the focal buyer. The aim of the interviews among the 17 suppliers and the interviews with the buyer respondents was to investigate the relationships between the buyer and the suppliers and to create a base for the upcoming survey.

The data in the pilot study (Paper 1) was collected personally, as well as the interviews at the focal buyer (Paper 2). The survey data (Paper 5) was collected by sending the questionnaires by mail, or on request, by e-mail. In addition to this, mail, fax and phone were also used in order to clarify situations or data during the data collection phase. The different arrows describe how the studies affect and are based on each other, as different substages.

The multinational buyer operates in the metal industry in Finland. The 17 suppliers in the pilot study were all located geographically close to the buyer. The suppliers in the pilot study were mostly small companies (59%), consisting of 6-50 employees. Supplier firms with less than 5 employees (micro firms) constituted 29% of the group and the rest (12%) were medium-sized companies. The size of the suppliers in the survey varied between 1 and 25 000 employees. The geographical setting and the supply network were international. The suppliers were located in 33 countries. A total of 279 suppliers received the survey and the response rate was 54%. In other words, 150 questionnaires were returned.

The areas that the personal interviews and the survey covered included basic **questions** about the company, the respondents' work tasks, the dyadic relationship and its quality, adaptation, cooperation, power and dependence. The questions also covered the degree and type of adaptation and areas of vertical and horizontal cooperation.

In the pilot study, the suppliers' view of the relationship with the focal firm was studied. The empirical material was gathered through **personal interviews** with suppliers picked within an area of 100 km outside Vaasa. The interviews lasted for about 1.5-2.5 hours and were transcribed afterwards. The results of the interviews are presented in Paper 1.

The third phase of the project continued with a large mail **survey** sent to the suppliers, who all deliver to the focal firm. These suppliers received a questionnaire where they were asked about their relationship with the focal firm. All of the suppliers who delivered in Finland and abroad received the questionnaire. In this survey there were questions about existing cooperation and adaptations (what does the cooperation consist of, with whom do they cooperate, which are the adaptations made, to which extent do they adapt and in which ways), as well as relevant background information.

The **questionnaire** was drafted and developed during the summer and autumn of 2000 and spring of 2001. The questionnaire was tested as a pilot study with the same 17 suppliers who had participated in the pilot study in 1999. By testing the questionnaire, it is possible to avoid unclear questions and reduce the risk of obtaining unanswered

questions due to unclarities (Wallén, 1993). It is also possible to obtain feedback in the case that too many questions are included in the questionnaire (Dahmström, 2000). Testing was divided into two different groups where the questionnaire was tested in two different ways. In the first group, the respondents were given the questionnaire and were asked to fill it out. The respondents in the second group were sent the questionnaire by traditional mail. Testing of the questionnaire for the survey was conducted in March 2001. Along with the questionnaire an enclosure was sent. It was signed by the two PhD-students conducting the survey, as well as the supervisor at the business school and the Vice President of Sourcing in the buyer company.

The mail survey was sent out in June 2001. The response rate of the survey was 54%, which can be considered as good. The survey is presented in Paper 5. During the data analyses, the SPSS computer program was used to analyze the data. **Factor analyses** were conducted in the analysis of the survey data. The intention with factor analysis is to express the original variables as linear functions of unknown factors (Ghauri et al., 1995). Factor analysis is used in order to limit or simplify the material and make it easier to interpret (Pallant, 2001). The thought behind this is to be able to explain the hidden factors, which can explain the correlation between the variables. In order to make the factors easier to interpret, one can use a factor rotation.

The planning of the Win-Win project provided the ideas for the start-up of the different sub-studies for the project. The earlier studies produced material and ideas for the next steps of the study. The survey was influenced by the prior pilot interviews at the 17 supplier companies and the eight interviews at the focal buyer. The questions were planned, structured and based on the earlier ones in the project as well as the present situation in the business network. The 17 suppliers answered the questions according to how they perceived the situation in the dyad with the focal buyer. The Win-Win project was not discussed to any larger extent with the suppliers in the pilot study. They were all informed that the aim of the Win-Win project was to analyze the relationships between a buying multinational company and its suppliers, but there were no extensive discussions around the project.

The Vice President of Sourcing at the manufacturing division at the focal buyer was informed of the different steps in the conducting of the survey. The Vice President gave access to address lists of the suppliers included in the survey. The researchers handed the questions for the survey to the purchasing department, at the manufacturing division before the survey sent out. Any of the contact persons at the purchasing department did not, however, affect the content of the survey or the questions. At this stage they were only informed of the contents.

The analytical reasoning and planning of the following stages of the study were affected by the findings in the previous stages. The different informants were discussing how the relationship to the suppliers were in the present situation, in the past and in which direction it was going in the future. The purchasing strategy of the focal buyer and the relationship to the suppliers was being analyzed and, these issues were the starting point for the survey. The changes in this supply network and the purchasing strategy, at this time, were described and analyzed and the project provided access for the researchers. This supply network is going through changes, and the most competitive ones will be able to cope. Most likely there will be changes in who will be on the 1st, 2nd and 3rd tier in the supply network in the future. The pilot study included suppliers on different tiers.

The data collection for Paper 3 and 4 was made during year 2001 and 2005. The data for the calibration case was collected primarily for Paper 3, but further analysis and comparisons were made with the furniture case. The additional interview with the initiator for the project, the furniture case, was done by Henrik Virtanen. The case material was collected separately by each author, and analyses were made together for Paper 4. More detailed information can be found in the papers.

4 RESULTS

This chapter contains the main results of the study. The different stages of the study are presented as well as the papers contribution. The main results are discussed and an evaluation is included.

The study was divided into several phases. The first phase of the study was a pilot interview with 17 local suppliers. The second phase included interviews with 8 respondents in different departments of the focal buyer. The last phase was a survey that was sent to all the suppliers of the focal buyer in the metal industry.

4.1 Results of different stages of the study

The results of the different substages of the study show that adaptation is common in the studied supply network.

The empirical material showed that the small- and medium-sized suppliers are dependent on the buyer, since 59% of the companies stated that they had no possibility to sell their products directly to another buyer after they had made the **adaptations** for the original buyer. A majority of the companies stated that more than 50% of their turnover is sold to the buyer.

The results from the **pilot study** showed that **cooperation** between the buyer and the suppliers exists. A majority (88%) stated that they have cooperation with other suppliers. Cooperation in this network exists in both vertical and horizontal forms. The cooperation is small-scale activities, and it often implies that the companies borrow tools or machines, buy products from each other's stock or buy services from each other. The companies also function as separate parts of the supply chain, as they manufacture and buy products from each other.

The aim of the **pilot study** was to explore the classification scheme for adaptations and to facilitate the development of the questionnaire for the upcoming survey. In the pilot

study, the suppliers were asked to state how and how much they perceived they adapted towards the focal buyer. They were asked to choose on a scale between not adapting at all to adapting to a great extent. The suppliers stated that they adapted mostly in terms of delivery times (how often or when), 71% stated that they had made adaptations to a great extent and a total of 29% stated that they had made adaptations to some extent.

The area where the suppliers felt they had made the second greatest adaptation was found in deliveries (size of deliveries or means of transportation). A total of 65% of the suppliers stated that they had made great adaptations within the area of deliveries and 29% of the suppliers stated they had adapted to some extent.

A total of 65% of the suppliers also perceived that they adapted to a great extent within the production process, whereas 29% stated that they adapted to some extent.

According to Johanson and Mattsson's (1987) classification of adaptations, one can say that most adaptations in the pilot study were made primarily within logistical functions and secondly within the area of technical adaptations.

A majority of the suppliers stated that they were willing to invest in the relationship with the focal buyer. They were asked if they were willing to invest in product development through knowledge or by direct costs. Only one supplier stated that it had been done, but 15 others said that they were willing to do so in the future. The interviews did not include questions or answers concerning why the suppliers had not invested already, only questions about their willingness to do so in the future of this relationship.

The second phase of the study interviews were conducted at the buyer and the respondents represented different departments. The 8 respondents were selected on the basis on who were in direct contact with suppliers. The areas of procurement, technology and environment were represented in the interviews. The idea was to establish the buyer's view of the demands and wishes of the suppliers and future

development. The degree and types of the buyer's perception of their own and the suppliers' adaptation were also studied.

Respondents were asked how they cooperated with the suppliers and what demands they had on the suppliers. It was also discussed how they perceived the buyer and the supplier companies' adaptation, and in which ways. They were also asked about strategies, expectations and plans concerning cooperation with the supplier. The questionnaire for the survey was later based on these interviews at the buyer.

The results from these interviews show that the buyer wishes to continue developing cooperation with the suppliers in this supply network. The buyer also wishes to increase system deliveries and is willing to give the supplier support in these matters. A lot of vertical cooperation activities exist between the buyer and suppliers, and horizontal cooperation between suppliers in the network exists as well. The buyer wishes to increase different kinds of cooperation in the supply network in the future. The results of the interviews show that the buyer adapts to a certain degree towards the suppliers, but that the suppliers adapt more.

In the third phase of the study, a **survey** was sent out. The suppliers were also asked to state how and how much they perceived they adapted towards the focal buyer. The suppliers were asked to choose between the categories and to choose the degree of adaptation. They were also asked to add a new category if a category was missing and to state it. No new categories were added.

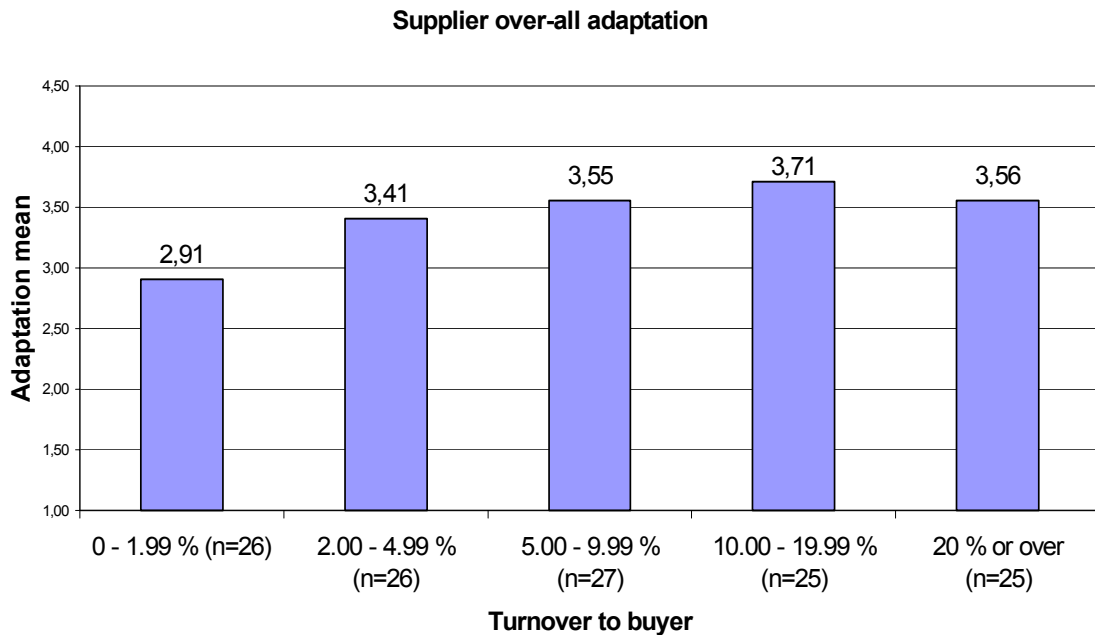
Among the 279 respondents many of the supplier firms report major adaptations. For example, 44.2% report product adaptation, 45.2% adaptations in product development, 32.2% in production, 38.6% in quality work, and 41.7% in personnel training. The least adaptations are found for adaptations of administrative routines (8.6%) and adaptations to environmental requirements (6.6%).

The respondents at the focal buyer stated that the studied supply network is going through major changes. The aim is to reduce the number of suppliers. This implies that

the suppliers who want to keep their position need to defend their position. The focal buyer is reorganizing and developing the existing supply network of suppliers and the aim is to decrease contact with the suppliers on the lower tiers of the supply chain. The buyer is then only in contact with the suppliers on the higher level of the supply chain. The first-tier suppliers are responsible for the rest of the supply chain with usually smaller companies. The focal buyer also wants to continuously reduce the total costs.

When the respondents at the focal buyer were asked in which ways the focal buyer is adapting towards the suppliers, different areas are mentioned. The focal buyer is adapting, for example, in all agreements the buyer makes with its supplier. The focal buyer also adapts in negotiating situations with their suppliers and in terms of technology. When the respondents in the focal company were asked about how they perceive the suppliers' adaptation, they mentioned mainly that they adapt in terms of the product and the delivery times.

In the pilot study, the majority of the suppliers stated that the buyer was the stronger part in the relationship, so the relationship is quite unequal. This was also confirmed by the buyer respondents. Many of the national suppliers in the pilot study delivered more than 50% of their turnover to the focal buyer, but in the survey results the situation was not the same. The international suppliers are generally larger than the domestic suppliers, and not as dependent as the national ones. Many of the international suppliers therefore have a better negotiating situation compared to the national suppliers, due to size.

Table 2 Supplier adaptation compared to turnover to buyer

In the survey, the suppliers were also asked to state their turnover and how much of it was sold to the buyer, and this was compared to their degree of adaptation towards the focal buyer (see Table 2). The results showed that suppliers with a larger share of the turnover going to the buyer perceived they adapted more. This question shows the degree of dependence to this customer.

The respondents at the focal buyer also state that they wish to keep the national suppliers. They prefer having local suppliers, where possible. The reasons are the geographical and cultural closeness, but the amount of international suppliers is increasing. The reason is often the size of the national suppliers. In order to stay on the first tier, the supplier company needs to be big enough and to complement the buyer's core competence. The supplier also needs to be willing to invest in joint R&D and to make adaptations in systems that correspond to the buyer's systems. The supplier also needs to be competitive enough and strategically important in order to keep their position on the first tier.

When cooperation, adaptation and dynamics are analyzed in business networks, the results can differ depending on the type of network you study. In created and

evolutionary networks (Paper 4) one can argue for differences in conditions. When companies cooperate in created networks, conditions are different than in evolutionary networks. The power balance may be different in created networks as the initiative owner has more power over the other actors. Both adaptation and cooperation may be easier to manage in unstructured networks or evolutionary networks.

4.2 Contribution of each paper

The thesis consists of five papers.

Paper 1 was based on the results of the pilot study of the project. The aim was to analyze the suppliers' **adaptation** to the focal buyer. A total of 17 suppliers in close proximity to the buyer were selected for the interviews. The results showed that the suppliers' **adapted** to a large extent. The interviews also covered the suppliers' **vertical cooperation** and **willingness to invest** in the relationship.

The results in **Paper 1** stated that the studied suppliers of the focal buyer are very **dependent**. If the focal buyer would stop buying, it would be hard to sell the product because of the **adaptations** that have been made. The suppliers state that they adapted mostly within the area of deliveries. Adapting within this area can be seen as a competitive advantage due to the fact that a larger company cannot be flexible in the same way in terms of delivery times. Adaptation within the area of deliveries can in this way be considered as an investment into the relationship with this buyer.

The results also showed that there is a mutual dependence between the buyer and the supplier, but the degree of **dependence** was unequal. The suppliers are more dependent on the buyer. In some cases, the focal buyer is the only customer and 100% of the turnover goes to this only customer.

Paper 2 was based on interviews with respondents representing the focal buyer. The respondents represented procurement, technology and environment. The interviews covered questions about the supply network as a whole, a comparison of the suppliers in

the network and **adaptations made in the dyad between buyer and supplier**. The interviews showed that the respondents at the focal buyer perceive that **the suppliers adapt more**. The buyer adapts less, in areas like agreements. The respondents at the focal buyer also perceive that the buyer is the **stronger** party.

The interviews also included a comparison of the national suppliers with the rest of the suppliers in the international network. The respondents of the focal buyer stated that the Finnish suppliers in this supply network would have small chances of being system suppliers, because of their small size.

The respondents also stated their perceptions of the suppliers' adaptation toward the focal buyer. The results showed that the respondents at the buyer perceive that the suppliers adapt mostly in terms of product and delivery times. The buyer also expects the suppliers to adapt in terms of the buyer's quality standards.

Paper 3 describes a group of suppliers who cooperate and adapt toward the focal buyer. The case describes a win-win situation for both the suppliers and the buyer. The article not only describes the **collective vertical adaptation and cooperation** toward the focal buyer, but also the **horizontal cooperation** among the suppliers. The article discusses the difference between defensive and offensive adaptation, as well as the value of adapting strategically as an investment. The paper describes how the position of the suppliers is improved by the ongoing and analyzed activities in the network. The paper discusses the importance of strategy in the management of adaptation and cooperation, as well as consequences of adaptation. Having a more defensive or offensive approach towards the focal buyer can result in a better or worse strategic position for the supplier.

Paper 4 examines network structure from a cooperational view. The paper describes created or intentionally created networks compared to unstructured or evolutionary networks and the purpose is to extend earlier theory and management concepts within the area of business network management. Motives, problems and the management of cooperation between the supplier and buyer within business networks are the areas of focus. The results of the paper show that there are differences to be found. All the actors

in this business network did not adapt to the common rules, and instead they behaved in an opportunistic way. In a created network, the readiness for adaptation was not there as in an evolutionary one, where the pieces for the cooperation structure fall into place more naturally. In an evolutionary network, the actors are familiar due to earlier episodes.

The structure and history of the network affects the conditions for the companies. The earlier episodes, or the lack of them, also affect the present and future activities. Cooperation between companies is affected and also the adaptation taken place. As there is a lack of trust between the parties, this also affects the outcome of the common activities. Earlier literature has tended to consider networks as given contexts, rather than a structure, which can be deliberately designed (Lorenzoni and Lipparini, 1999). Ebers (2002) argues for further research on understanding and explaining inter-organizational network formation and the underlying motives for cooperation. Paper 4 partially fills this research gap, and contributes to the lack of knowledge management needs for these different kinds of networks. The studied contrasts are highlighting how important the earlier episodes are for cooperation in networks. A lack of common history has serious effects on the outcome of cooperation.

It should be stressed that all networks are embedded in other networks. Being part of other already existing networks may be in conflict to the start-up and creation of new intentional networks. It might not always be easy to invest in new projects or networks as these resources are already tied up. These problems did not come up in the interviews, but actors in networks are all committed to several parties. Some intentional networks never come further than to the planning stage, but probably most actors honestly aim at starting long-term relationships. We still have many projects that fail. That is why we need to look into these situations, in order to be able to find out why the projects do not succeed. Within already existing network formations we also have an ongoing evolution, which develops and shapes the network.

This paper is included in the thesis because it compares the atmosphere in networks and shows how the network structure affects the atmosphere of cooperation in networks.

The results in the paper form an arena for further discussion. It has been argued that the competitive environment of companies is undergoing continuous change and that traditional markets are being replaced by new kinds of networks. These new types of cooperation affect adaptations made in these networks, as there is not a readiness for adaptation as in more unstructured or evolutionary formed networks. In structured or created networks, the network functioning is different. These differences form managerial challenges in order to study what these differences imply for the interaction in the network.

Paper 5 describes and analyzes the data from the survey. The aim of the paper is to analyze the suppliers' current and past **adaptation** towards the focal buyer in the supply network. The results show that **adaptation** within this particular supply network is **mostly within product related areas**. As 44.2% report product adaptation, 45.2 % report product development, 32.2 % report production, 38.6 % report quality work, and 41.7 % report personnel training. The least adaptations are found for adaptations of administrative routines (8.6 %) and adaptations to environmental requirements (6.6 %). In the paper it is also stressed that adaptations are interrelated, as one aspect of a system (for example in production), leads to another change in other aspects of the system, like in, for example, organizational change. The findings of the study revealed a will to adjust more if the supplier was dependent on the customer, which is in line with past research. The results also show that the adaptation was advantageous as it had positive effects on market share and profitability.

Adaptation takes place in the dyad, but the dyad has its place in the rest of the business network. As the supplier adapts the change goes further on into the next actor in the network.

The adaptation can be compared to a value chain in a value system. The adaptations are created according to the customer's demand, preferences and evaluations. These demands are a result of the development and change in the business network. Some of the changes are started by the competitor's moves, but the change, which leads to this adaptation, may also start in the manufacturing chain. The value co-creation (see more

in Forsström, 2005) in the chain can be started by the adaptation and commitment showed by the party. The adaptation shows commitment and can be seen as a valuable input to the relationship, as the relationship may become stronger because of it. However, the adaptation in itself may, but not automatically, create value. Adaptations are also interrelated, as the change in one factor or activity also results in the need for changes or modifications. This change can be compared to systemic innovations (Chesbrough and Teece 1996; Teece 2000), where a change in one place can result in something unexpected and valuable.

The findings in the articles support each other. When one side of the dyad was studied, the suppliers' side, the findings in **Paper 1** showed that the local suppliers adapt to a large degree towards the focal buyer in the metal industry. These local buyers are smaller than many of the suppliers in other countries and their size also makes them more dependent and vulnerable in their adaptation. The findings in **Paper 2** support the findings in Paper 1. The informants at the focal buyer stated that the size of the local suppliers result in less chances of cooperating closer with the focal buyer in the upper level of the supply network. In order to be in the upper part of the supply network, in close cooperation or partnership with the buyer, a supplier needs to have all the resources required and also be large enough. These suppliers can then be system suppliers and keep in contact with the smaller suppliers further down in the supply network. If the domestic suppliers can grow and keep their position in the upper level of the supply network, then the buyer can also keep the close contact that they wish to have. **Paper 3** analyzes a case of collective adaptation among suppliers towards the focal buyer. The paper is an example of a win-win situation for the involved companies. It discusses the importance of strategy in the management of adaptation and cooperation, as well as consequences of adaptation, as in Paper 5. A more defensive or offensive approach towards the focal buyer can be a better or worse strategic position for the supplier. **Paper 4** analyzes cooperation between actors in created and evolutionary networks. In the paper, motives for problems and conflicts in company cooperation are identified and discussed. It stresses the importance of management and control in cooperation. The paper highlights the contrasts in different business networks. The lack of time, trust and commitment affects adaptation and evolution of the atmosphere of

cooperation. A lack of trust may function as a barrier to further adaptations and investments into the relationship. The dependence of the other party is shaping the power balance and a power struggle is the result in one of the cases. This paper is not selected as a typical case for these networks; the point is to highlight these issues for their affect on the atmosphere, adaptation and cooperation in the network. Having a good climate between cooperating companies is of importance for the performance, and most scholars would argue that the less conflictive the climate, the higher the performance is likely to be, despite some discussion about the functionality of conflict (Reve an Stern, 1986). As in Paper 3, this paper analyzes the motives for cooperation and argues for the conscious management of cooperation. The research area in Paper 4 has not been focused on enough in earlier research. In the future, there is a need for more research on how different kinds of networks affect the management of these network types.

Paper 5 presents the results of the survey. The results show that adaptation is common among these suppliers. They perceive they adapt most within product-related areas and least within administrative routines. This buyer does not yet have any strong requirements in terms of environment, but the respondents state that these requirements will increase in the future. There were no correlations between relationship age and the degree of adaptation, as earlier research results have also shown.

In the papers, different views of the studied area are taken. Looking at the same phenomenon from both a vertical and a horizontal point of view increases the possibility of including different perceptions of the area. In the study, it is highlighted how the horizontal cooperation between suppliers (in the paper concerning the founding of the calibration laboratory) strengthens and increases the power towards the buyer. These activities can be compared with vertical cooperation with the buyer, where the power difference is more unequal.

4.3 Evaluation of the study

Criteria for validity and reliability are two important areas in all research. These are used to check the quality of scientific research (Yin, 1994). **Validity** concerns whether the findings are really about what they appear to be about (Dahmström, 2000) and **reliability** whether the researcher will end up with the same results if the study is repeated. It also poses the question whether similar observations have been made by different researchers on different occasions (Saunders, Lewis and Thornhill, 1997).

According to Yin (1994), **construct validity** is to establish the correct operational measures for all concepts that are studied. This can be established by the use of multiple sources, as in a survey and with interviews. **External validity** has often been problematic in case studies, as the findings cannot be generalized to the same extent as a survey including many respondents. According to Eisenhardt (1989) though, case studies can be used to take the research discussions further on as they can represent a polar type of case. In the case of surveys, external validity is not problematic in the same way. Concerning **reliability** it needs to be demonstrated that the operations of a study such as data collection can be repeated with the same results. This is possible with a survey and with interviews. They can indeed be repeated, but one can argue that perceptions of a phenomenon like adaptation or feelings of power or dependence are likely to continue to develop and change as time goes by. That is why one can argue for the fact that the same type of studies would probably produce new and maybe different results. Studying adaptations is a snapshot of the relationship at that certain time or the past, not a snapshot of tomorrow. Asking different individuals in the same organization might also give different views of the same phenomenon. Different people mention different views depending on their individual position in the company.

This study argues that all the individual adaptation in a company forms the organizational adaptation. The organizational adaptation is formed by each individual perception of the past and present behaviour of the last contacts that persons at each end of the studied dyad have had. The study has considered adaptation from the managers' view, or the owners of the supplier companies, as well as the views of the persons in the buyer company, that are in almost daily contact with the supplier companies. Asking

persons working solely with production might give a different picture of the same phenomenon. There might also be a difference between what a person says and what he or she actually does. According to Wallen (1993), the interpretation of results is one of the most challenging areas of qualitative research. One of the main problems is the interpretation of subconscious messages and how they should fit into the theoretical context. Comparing answers in interviews and surveys is good when studying sensitive subjects like adaptation, power and dependence. If one does not get a straight answer, for example from an interview, the answer might be found in the survey. This is another reason for using mixed methods.

Mapping perceptions of adaptations from both sides would create a relatively complete map of the perceptions of adaptations made. Studying them at the same time would be the ideal situation, as well as comparing both parts' view of their own and each other's type and degree of adaptation. This comparison between different sides of the same phenomenon at exactly the same time is a subject for further research. Collecting data from both sides of the dyad can be seen as a kind of triangulation within methods. As adaptations are perceptions of power and feelings, it is hard to find the exact truth. Therefore, it is relevant to study both sides of the dyad in order to study the phenomena from different perspectives. In daily business life, we usually see only one side of the dyad. This study has mainly focused on one end of the dyad. Mapping both sides of the dyad at the exact time, and asking the exact questions would have made it possible to go deeper into the research area than this study has done now.

The study has identified different situations of adaptation and cooperation in order to analyze them. The aim has not been to compare different industries. However, this could also be of interest in future research.

5 CONCLUSIONS

The research question of the thesis was

In which ways, to which extent and why do adaptation and cooperation take place in the studied network and what are the consequences of it?

The different stages of the study have provided results to different parts of the research question. The pilot study, Paper 1, contributed with results of *in which ways and to which extent* the local suppliers adapted and cooperated. The interviews with the focal buyer, Paper 2, showed the other side of the dyad and described *in which ways* the buyer adapted and the degree and in which ways the informants at the buyer company perceived that the suppliers adapted towards the focal buyer. Paper 5 analyzed in which ways and to which extent the suppliers adapt. The *consequences of the adaptation and cooperation* were described and analyzed in the different sub studies for the thesis and are analyzed more in Papers 3, 4 and 5. In these papers different motives, benefits and drawbacks of adaptation and cooperation were described and analyzed, in order to increase the knowledge of *why* the studied companies adapt and cooperate. Based on this analysis above, one can consider that the research question of the thesis has been answered.

In the following subchapters, the contribution of the thesis will be further analyzed.

5.1 Theoretical contribution

The theoretical contribution of the study is to be found within the *new definition*, which is proposed in this study. This new definition puts more focus on the outcome of the process and describes more the modification of the behaviour as mental or concrete. This definition is a new tool for a more extensive adaptation analysis. It stresses the mental side of adaptation, which is not always visible. This invisible readiness or modification shows later how committed the party is.

Earlier research (Brennan and Turnbull, 1995) has touched upon the fact that adaptation is hard to define, and that researchers have even avoided the problem of defining it. There have been several earlier attempts at defining the concept of adaptation. Some researchers have started by stating the fact that one can look as far back as in human and cultural adaptation as well as in evolution and find adaptation. Each study has based the definition of adaptation on results from different contexts. Depending on the type of adaptation and the resources involved, for example if it is tangible or intangible one has defined it differently. Earlier research has also identified a need for adaptation studies in different *industry* contexts. This study contributes to this gap.

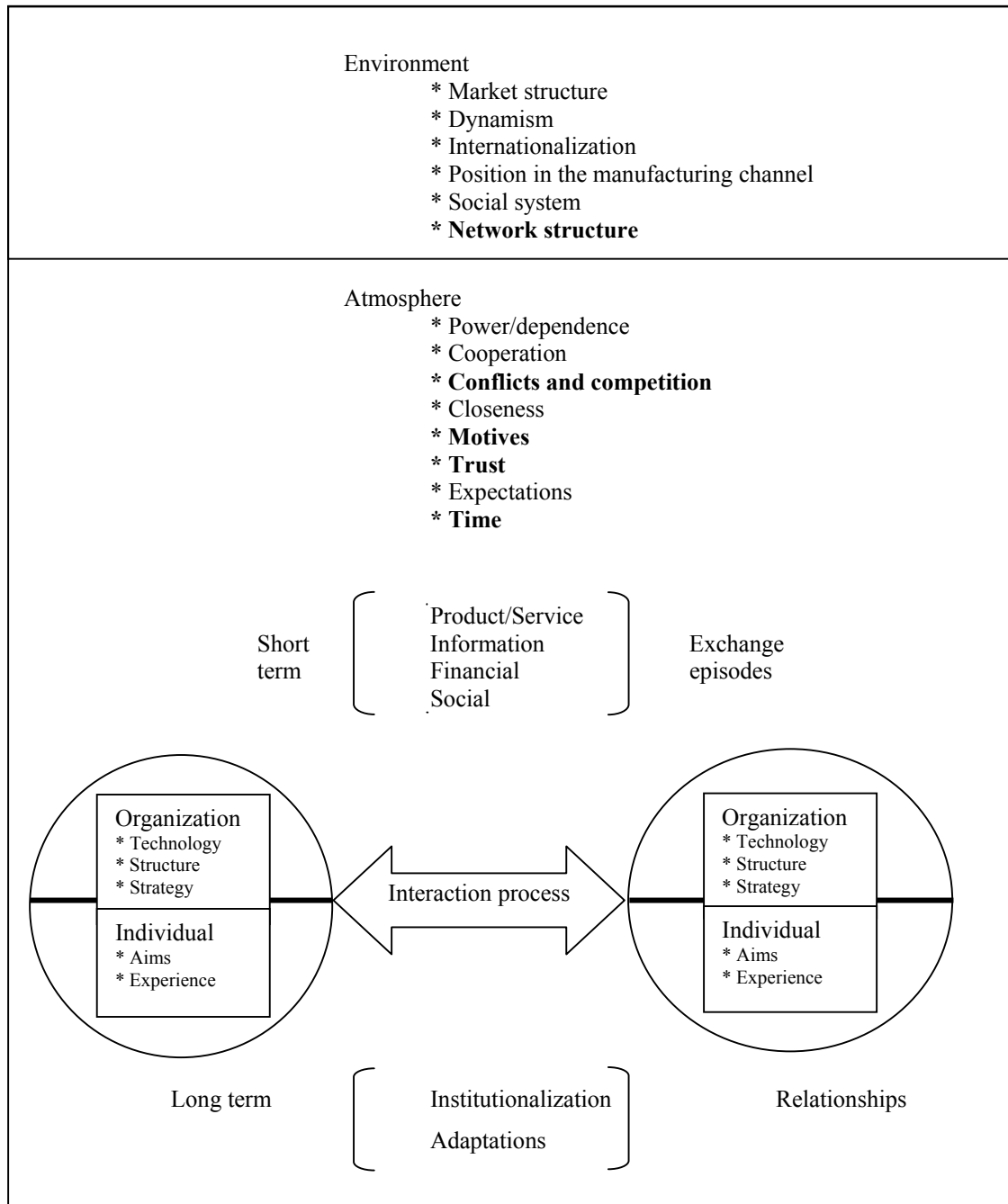
Based on this study in the area of adaptation, a new definition of adaptation is being proposed instead of the earlier definition:

Adaptations should be regarded as offensive or defensive modifications, carried out by one or two parties to meet the needs of one's own or those of another individual or organization.

The described modifications are mental or concrete modifications, not solely a behaviour, as in the definition by Brennan and Turnbull (1998). In this study, it is stressed that adaptation is ***a perception of a studied behaviour***, one's own or someone else's. The earlier definition by Brennan and Turnbull defines adaptation as something that can be observed, but one should also stress the fact that adaptation in the beginning is a mental process that is not an observable behaviour until later. The definition puts more focus on the outcome of the process than earlier definitions.

The study also ***contributes with increased focus on new elements to the original interaction model*** (Håkansson, 1982). The suggested elements are stressed because of their importance for the interaction. The importance of network structure, trust, time, motive, conflict and competition affects cooperation and adaptation in business network, since they affect the outcome of cooperation, they shape adaptive behaviour and especially the motives. The added areas need to be stressed as they affect the network functioning and the results of cooperation.

Figure 4 The interaction model (Håkansson, 1982) with suggested additions



The above figure (Figure 4) shows the new additions to the original interaction model by Håkansson (1982). The suggested additions are described more deeply in Paper 4. The suggested elements are added because of their importance for the interaction. The *network structure, trust, time, motive, conflict and competition* affects cooperation and adaptation in business network, since they affect the outcome of cooperation and they

shape the adaptive behaviour and the commitment. The studied areas in the thesis need attention as they affect the network functioning and the results of cooperation. These elements also need more attention and to be further studied in the future.

Furthermore earlier studies within business networks have not studied the *consequences of adaptation.* This study contributes by analyzing different motives, benefits and drawbacks of adaptation and cooperation in order to increase the knowledge of *why* the studied companies adapt and cooperate. Based on the analysis above, one can consider that the research question of the thesis has been answered.

It is argued that some actors adapt consciously if they find it advantageous, but some actors may also adapt in *an unconscious way.* The actors seldom or never have the complete overview over the consequences of adaptation. This is a good motive why one should note and be aware of adaptation and the consequences of them.

It has been suggested that *adaptation is a result of change* (Nummela, 1997), but it can also be seen as *a result of stability.* Within an exchange relationship, every episode that precedes the following one sets the base for the next one. The atmosphere includes closeness and expectations that create the frame for adaptations, which can or will not take place. The atmosphere is also created by trust, which can be shaped by stability and structure of the relationship. The stability can be found in the dyad as a result of the long-term type of relationship the parties have. Change can still take place outside the dyad, but stability in the relationship creates the necessary conditions for trust and adaptation. Canning and Lloyd (2002) argues that the study by Brennan and Turnbull (1999) does not point out the fact that both partners in the dyad can be involved in the adaptation process. In the case of a one-sided adaptation, this might be the case however.

According to Canning and Lloyd (2002), adaptation is a sequence of negotiation, commitment and execution stages. This is based on the presumption that the behaviour is conscious and not unconscious. This study, though, argues for the fact that a large deal of the adaptive behaviour is unconscious: especially if the situation is not perceived

as a power struggle. In the case of, for example, a negotiation of environmental (green) adaptations, the situation can be perceived more as a negotiating situation and more visible stages can be identified.

According to Hallén, Johanson and Seyed-Mohamed (1991), adaptation is of importance in the dynamics of the business relationship, because most relationships are based on some kind of match between the operations of these two firms. The adaptations are in direct proportion to the difference that exists between the parties, and the greater the differences are, the more reason there is to make specific adaptations (Gadde and Håkansson, 1993). The identified differences and the gaps need to be filled by one of these parties. Depending on the company strategy and the motivation or need of the company, it will try to fill the identified gap that exists between the companies. These gaps can be filled by adapting or investing in different ways. The company that is more motivated may want to adapt or invest more than the other party.

Earlier research has divided the adaptation process into three different parts, a motivation part, a process part and an outcome part (Brennan and Turnbull, 1996). One can argue if there is a possibility to distinguish these three different parts. Instead, one could argue for one complete continuous process with no separate sub processes. Or we could conclude that we can look at adaptation through different glasses.

Analyzing adaptations by classifying the adaptation is a way of becoming aware of which kind of adaptations are made. Becoming aware of these adaptations facilitates the strategy. Analyzing adaptations, dependencies and the existing strategy provides the company with feedback on the existing situation in the dyad between the buyer and seller. Classifying and analyzing increases the awareness of the power-dependence structure and it also needs to be up-to-date with the reality. As the business develops and changes, so should the awareness of the classification areas. During recent years there has, for example, been an increased focus in business life on, for example, quality, purchasing and environmental issues. This study has included these new classifications. The study has also collected previous adaptation studies under the same umbrella and presented a more focused picture on this research area.

Table 3 Classification of adaptations with new additions.

Study	Classification of adaptations	
Håkansson (1982)	Supplier and customer adaptation of:	
	Product specification Product design Manufacturing process Planning	Delivery procedures Stockholding Administrative procedures Financial procedures
Turnbull and Valla (1986)	Customer adaptation of:	Supplier adaptation of:
	Product Manufacturing process Payment terms Production planning Delivery Stocks	Product Manufacturing process Payment system Stocks and deliveries
Hallen et al. (1991, 1993)	Customer adaptation of:	Supplier adaptation of:
	Product Production process Production planning	Product Production process Stocks
Holmlund and Kock (1995)		Supplier adaptation of
		End product Information routines Payment routines Inventory Production process Production planning Administrative routines
Cannon et al. (2000)	Customer adaptation of:	
	Product features Personnel Inventory and distribution Marketing Capital equipment and tools	
Brennan, Turnbull & Wilson -2003	Supplier and customer adaptation of:	
	Production planning and scheduling Stockholding and delivery Product Information exchange Production process Financial or contractual terms and conditions Organization structure Other	

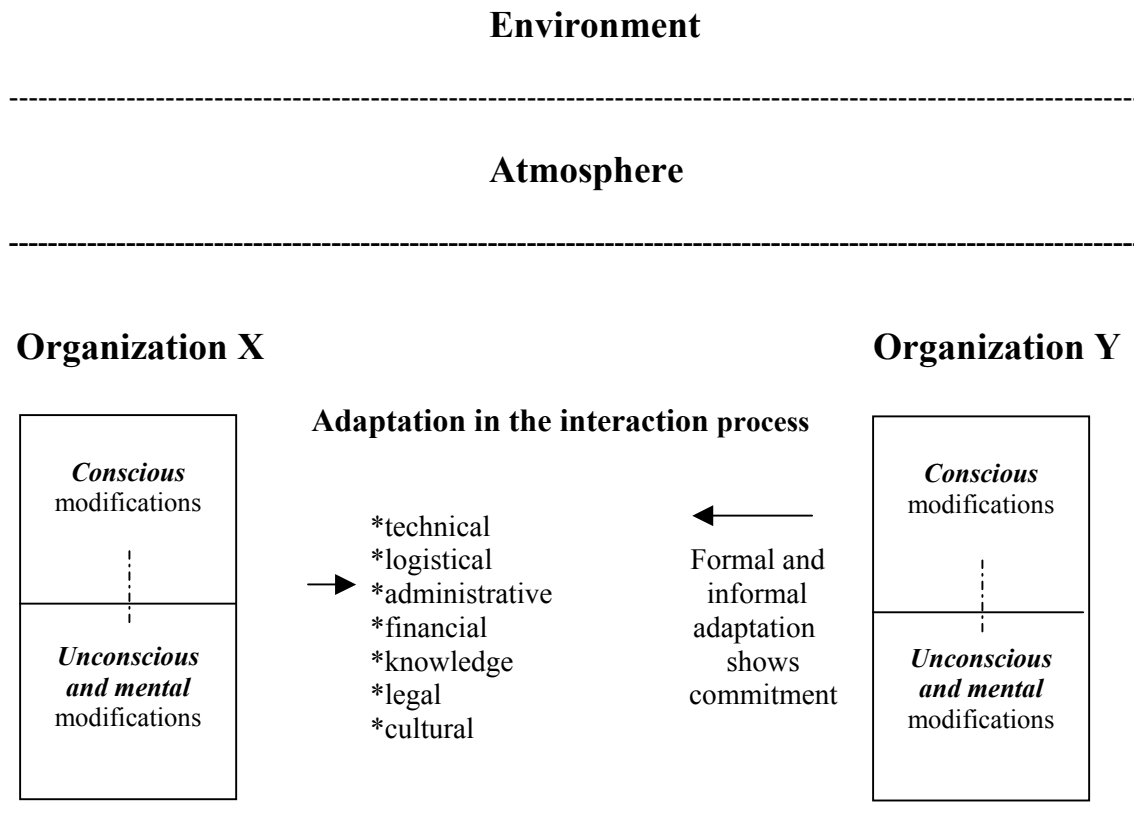
Study	Classification of adaptations	
Hagberg-Andersson, Kock, Åhman 1999 and Hagberg-Andersson, Kock, Åhman 2000	Customer adaptation of: Contracts and agreements	Supplier adaptation of Product Product development Production Logistics and distribution Stock keeping Purchasing Administration routines Marketing Payment routines Quality work Information exchange Personnel training Environmental requirement

Adapted from Brennan, Turnbull and Wilson, 2003.

The study also adds theoretically by increasing the area of *adaptation classifications*, as it adds new areas to the existing ones (table 3), i.e. *environmental- , quality- and purchasing adaptations*. The classification of adaptations needs to be developed as changes and new demands take place in and outside the relationship. Over the last decades, there has been an increased focus in business life on, for example, quality, purchasing and environmental issues. These new classifications fill these new demands more than the less extensive classifications from previous studies.

The main issue is, however, not the number of different classifications, but that the analysis increases the awareness of different ways of adaptations a company can make. The main point is not the different ways of adapting, but *the sum of adaptations gives a view of the willingness and motivation* towards cooperation with the buyer. Adaptation is a signal towards the other party. The sum of adaptations in companies still needs to be carefully analyzed, so that the dependence will not be so big that it weakens the company. This is why adaptation should be part of a conscious plan, as stated in Paper 5, a goal-directed behaviour. The firms are embedded in ever-changing and partly unpredictable environments and the possibility to adapt can be seen as a beneficial way of surviving.

Figure 5 Adaptive behaviour in the interaction process



In Figure 5, different classifications of adaptation are shown. This study also stresses the fact that the adaptive behaviour should not be separated at different levels, which is the organizational AND individual level, because the individual adaptation IS the organizational. Each individual in the organization represents the organization, and the two views cannot be separated, though earlier research has separated them.

Central for this study has been cooperation and the adaptation taking place within it. Resources in networks are scarce and all networks are embedded in other networks. As you are part of other already existing networks it may be in conflict to the start-up and creation of new intentional networks. It is not always easy to invest in new projects or networks as these resources are already tied up. Some intentional networks never come further than to the planning stage, but probably most actors honestly aim at starting long-term relationships. We still have many projects that fail. That is why we need to

look into these situations, in order to be able to find out why the projects do not succeed. Within already existing network formations we also have an ongoing evolution, which develops and shapes the network.

In earlier theory it has been discussed that investments cannot be transferred to other business relationships. Direct investments, which are directly connected to this specific relationship, cannot be transferred, whereas for example knowledge of adaptation, or the experience in one relationship, can be transferred to another.

Research into adaptation and cooperation research is closely connected. As the cooperation starts the adaptation starts as well. Cooperation shapes the adaptation in both companies in the dyad, and adaptation shapes the cooperation back. Separating adaptation and cooperation is hard as they very much go hand in hand. Where there is cooperation there is some kind of adaptation and where there is adaptation there is also cooperation. The purpose of the thesis was to describe and analyze existing adaptation in cooperation between the buyer and suppliers in business networks. Moreover, to provide a descriptive and analytical study of how and to which extent the companies adapt and cooperate.

5.2 Empirical contribution

The purpose of the thesis was partly to analyze **in which ways and to which extent adaptation and cooperation takes place** in the studied networks. The nature of this question is empirical. The extent and degree of adaptation and cooperation shows to some extent how important this activity is for the involved parties. If you have extensive cooperation with someone, this cooperation is most often quite important. If you adapt in this dyad, this also has consequences for your company. It shows how committed you are.

The study has contributed to existing research by describing and analyzing **in which ways and to which extent adaptation and cooperation take place** in the studied

networks (Papers 1, 2 and 5). This part of the research question can hereby be considered as answered in the included papers.

Empirically, the study contributes by gathering empirical evidence from different industry contexts. The metal industry is studied in Papers 1, 2 and 5 and the furniture industry and metal industry in Paper 4. Most literature has described the buyers' point of view in studied supply networks, whereas much less attention has been paid to the suppliers' view towards them (Holmen and Pedersen, 2006). The focus of this thesis has mainly been on the suppliers' view of adaptation and cooperation in the network, so partly this thesis is filling that gap.

This also applies to adaptation and the way it is strategically handled. Activities should also be planned over a longer term. If one actor adapts today and the other adapts tomorrow, we have a zero-sum game that might continue for a long time. If only one actor adapts continuously, we have an unequal dependence that has consequences for the future of the relationship. Interaction between the buyer and seller takes place at the individual level and the individuals responsible for these relationships need to develop them in the right direction.

In earlier adaptation studies, it has been argued that there is a need for more knowledge of adaptation, and especially that data should be collected from both ends of the dyad. There is also a need for adaptation studies from different industries. The present study contains **data from a single-ended adaptation study**, which is the suppliers. The study does not compare both sides of the dyad at the exact time or in exactly the same way. It compares the perception of adaptive behaviour mainly from the suppliers' side.

Competitive success is often dependent on the ability to adapt. A majority of the suppliers in the pilot study expressed a wish to invest in the relationship with the buyer and this showed that they are willing to commit further into the relationship with the buyer. The domestic suppliers need to be globally competitive, large enough and invest in the relationship with the buyer. Competitive success is about knowing what to invest in and when. It is also about providing value and knowledge to your customer. The

buyer has national suppliers, who want to invest in the relationship with the buyer, but the suppliers need to provide value to the buyer, and they also need to stay competitive enough.

A supplier is sometimes expected to follow certain standards in the common quality work as well as adapt. Following standards can be compared to investing in a higher level of quality. Adaptations may also be seen as investments, as long as they improve the companies' position. For example, adapting towards a buyer's needs in terms of quality standards can be seen as an investment. Adaptations should also be part of the companies' strategy work, and in this way become more visible. Adaptations may be carried out as investments, carefully analyzed to improve the company position, not weaken it. A key question is whether managers in the supplier companies understand and manage their adaptations. Adaptation in a relationship is necessary, but the degree and type should be carefully analyzed.

Cooperation in networks can be more efficient than trying to do everything alone. By cooperating with other actors in a network, it is possible to gain access to resources that you do not possess yourself, i.e. you receive more **possibilities**. A network is probably also more able to absorb downturns (Jarillo, 1993), and it is possible to adjust to overall changing conditions. In order for a supplier to improve or keep the position in the supply chain, the buyer has expressed a wish that a supplier should be large enough and strategically important. In this way, the supplier can keep a position close to the buyer and have the chance to continuously improve the relationship. By not thinking strategically, there is a chance that the supplier will lose its position in the supply chain, and drop further down to a lower level. By analyzing its history, a company can understand the reasons behind its present strategic situation.

By cooperating and adapting to each other, smaller suppliers can also achieve a competitive advantage. By getting more sub suppliers and by outsourcing, the supplier can also grow, and get further up in the supply chain. In this way, it is also possible to gain access to other resources in the network and attain a strategic place in the supply chain. By keeping a position at the top of the supply chain, the supplier has a chance to

both adapt and invest strategically in the relationship. Losing this position means that the possibility to influence the relationship disappears, and the consequences may be severe. Through having a position closer to the buyer, the supplier has a possibility to shape the relationship in several ways, in the way more contact can provide. All the different classifications provide different possibilities for investing actively into the relationship as well, not only passive adaptation. The chance is there and the supplier can use it.

According to the results of the interviews, the buyer's wish is that the suppliers would cooperate more. The calibration case (Paper 3) is a good example of such cooperation. The cooperation in the furniture case points out how important management is in cooperation. A neutral part can be very good to include in different situations of cooperation. By doing so, the results can be better and cooperating actors look forward to future cooperation activities as well. When companies cooperate the will to adapt can be different. For example, a smaller company can be more willing to adapt than a larger company. A company delivering a large part of the turnover can be very willing to adapt to a very important buyer.

The results of the study stress the importance of the studied research area. Cooperation and adaptation are important in the interaction between companies. Adaptation, cooperation and change result in a different power/dependence structure in the business network. These areas make the companies vulnerable and they need to be taken more into account as the company strategy is made.

In all relationships the actors are dependent on each other. The adaptations made in the relationship influence both parties as the change spreads, i.e. the adaptation is mutual. The change affects the other party in the dyad as well as the other companies in the network. Adaptations create a base for the efficient exchange in a relationship. It makes it hard to use alternative sources as switching costs arise. Investments have been made and these tie the actors together.

In the beginning of the project, the approach of the study was more descriptive. However, along the way the approach changed somewhat. In order to be able to contribute to the existing research gap, we need to ask ourselves how this adaptation and cooperation in business networks should be managed. The study contributes by discussing strategies in how to handle these activities in business networks with the company strategy in mind.

5.3 Managerial implications

The results of the study stress that adaptation should be included to a greater extent in the strategy work of companies. Adaptations may be seen as defensive or offensive, but most of all they can be seen as investments. The adaptations should be carefully planned and, as far as possible, made consciously. Conscious, well-planned adaptations can be seen as investments into present and future relationships, and resources should be invested into something that does not increase the company's dependence, but divides the power in the relationship between the companies.

In the present study, it is stressed that adaptations can be seen as investments. Adaptations should, however, be more carefully planned so that they result in a more offensive way of responding to the demands that are placed upon them. In this way, the actions can be viewed and analyzed in accordance to whether the actions make the company weaker or stronger. The perception of the same activity, adapting or investing, can be viewed differently depending on how the power-dependence balance is perceived. The same activity can also be viewed differently depending on from whose view it is seen (Hagberg-Andersson, 2006). The results of the analysis in the calibration case (Paper 3) also show that collective adaptation can change the power dimension and make companies less dependent. This adaptation can be seen as an investment into the present as well as future relationships. When adaptations are made as active investments, they make the company stronger. As passive adaptations, they make the company vulnerable. Forced adaptations are a result of the unequal power-dependence structure between the companies in the relationship. Environmental requirements can, for example, be seen as an area where companies are forced to adapt. But many

companies today use environmental progress as a strategic tool in their communication with society. Quality and environmental issues are important areas in today's business world and investments in these areas are regarded as important. Refusal to adapt to these important areas will have severe consequences for the company.

This study also adds new research areas within adaptation by including areas such as purchasing and the environment, which have not been included to a large extent in earlier adaptation research. As cooperation increases in most business networks, the role of purchasing and environmental issues also increases.

It is impossible to know about the future, when you plan your company strategy. Often it is suggested that companies should focus on their core competence, but it is difficult, though, to know what will be a profitable "core" or business in a few years' time. The confusion over being too much or too little integrated with other companies has been discussed, and the affect it has on efficiency. The integration and exchange should be carefully planned and regularly monitored.

The **normative results** will increase with new information about cooperation and adaptation in networks. One aim was to increase interest and awareness of adaptation. This new knowledge can hopefully enable the companies in the study to improve their competitive advantages towards competitors with the help of vertical or horizontal cooperation. Goals with cooperation are, for example, to cut costs and to increase the values of the ongoing activities and outcomes of the company. Another goal can be to decrease the power and competitive advantage that the buyer has on these SMEs or to increase the resources that the individual company has together with the other companies that they work together with. The results and information can be an incentive for cooperation for other suppliers that do not have simple or far-reaching cooperation with other companies in the network.

5.4 Suggestions for future research

Within this research area there are still gaps to be filled. In earlier adaptation studies, it has been argued that there is a need for more knowledge of adaptation, and especially that data should be collected from **both sides of the dyad** at the same time. This study contains data from a single-ended adaptation study, which is the suppliers, compared to the other side of the dyad, the buyer. Future research can gather information from both sides of the dyad at the same time, and in this way we would be able to gain more knowledge in the area. These results would make the results comparable, when they are collected within the same areas and at the same time.

In earlier adaptation studies, it has also been argued that there is a need for more knowledge of adaptation in different industries. This study has contributed by analyzing especially one industry, the metal industry. Still more is needed. Future research could include several **large scale studies in different industries** in order to be able to identify differences between different industries.

Another suggestion for further research is to make a **longitudinal study** of adaptation and cooperation in a few selected dyads. The study could include a more extensive study of how different elements in the interaction affect the adaptation and cooperation during different stages of the relationship. The study could stress suggested new elements in the interaction model and study the affect of time on the adaptation and cooperation in the dyad.

Future research could also look more into **the mental side of adaptation**. How does the adaptation start, continue and proceed? What pushes adaptation forward and what makes it stagnate?

One can argue that adaptation can be compared to a value chain in a value system. These adaptations are created according to the customers' demand, preferences and evaluations. The suppliers may see them as something that needs to be done, or they may see them as something that created value in their company. The adaptations made

are also interrelated, as the change in one factor or activity also results in the need for changes or modifications. This change can be compared to systemic innovations, where a change in one place can result in something unexpected and valuable. As suggestions for future research, one could study **the suppliers' views and attitudes to adaptations**. Do they see them as **something that create value**, or are they just regarded as something, which is necessary in order to stay in business. Do they have any experience from anything like system innovations? Can the adaptations result in something unexpected and more valuable?

Another area of future research could be to look deeper into **network formation** and why many project networks fail, in order to be able to find out why many of them do not succeed.

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Appendix 1 Accompanying letter for mail survey

Dear receiver,

Many changes are taking place within the metal industry today. Knowledge of the structure within the industry and its networks is needed so that companies can act in accordance with the changes in their business environment. The aim of this study is to increase the knowledge. The research is also part of two Ph.D. theses. One is focusing on the purchasing aspect and the other on adaptation and cooperation between companies. The network studied in the present work consists of the buyer and its suppliers. All companies supplying to this buyer are included in the study. The company addresses were provided by the buyer.

Your contribution is most important and by filling out the questionnaire we are able to analyze and illustrate what is happening within this industry. The information that is gathered is only handled by the researchers. The results of the study will be presented in research reports where facts of single companies cannot be traced. The buyer is supporting this study.

We wish that you return the questionnaire by June 15, 2001. If you have any questions, please contact the researchers at the address given below. A copy of the research report will be sent to all participating companies, which wish to receive one. Please indicate in the end of the questionnaire if your company wishes to receive a copy of the report. Thank you for your cooperation,

With best wishes,

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Appendix 2 Questionnaire for mail survey to suppliers

Please, use capital letters when filling out this questionnaire. Additional comments can be written on the back of this paper or on a separate sheet. The questionnaire will take approximately 20 minutes to fill out. If you have any questions, please do not hesitate to contact the researchers. (Contact information on the last page).

Lomake on myös saatavana suomenkielisenä. /Enkäten kan även fås på svenska.

A. General information

1. Location (city and country) _____
2. Company's year of establishment _____
3. Turnover year 2000 (in Euro) _____ of which _____ % is from export
4. Ownership of the company _____
5. Number of employees _____ in total year 2000
Number of employees in production _____ %, other _____ %
6. Company's three (3) main products _____
7. Your title/job description _____

B. Relationship to other companies

- 8 a) Since when has the company been a supplier to "the buyer company"? _____ year
- b) How many percentage of the turnover is sold to "the buyer company"? _____%
- c) How important is "the buyer company" as your customer? *(Please, mark one alternative)*
 The most important Among the 2-5 most important Among the 6-10 most important
 Other: _____
- If "the buyer company" is not your most important customer, where is then this customer located?
 In your home country Abroad
- d) How many customers does your company have? _____ customers
- e) Name your five (5) most important customers *(In order of decreasing importance)*

- f) How many percentage of the turnover is sold to the customer that buys the most? _____%
 I do not know

9 a) Which products does your company deliver to "the buyer company"? _____

- b) What is your company's core competence? _____
- c) What is your company's most important resource? _____
- d) What do you consider that your company delivers to "the buyer company"? *(Please, mark the alternative that best describes the current situation)*
 Strategic components Standardised components
 Volume components Critical components
 Other: _____

10 a) How many competitors does your company have?
 _____ national competitors _____ international competitors

b) How many other companies do you think deliver the same products to "the buyer company"?
 _____ companies

- 11 a) What kind of quality system does your company have?
 ISO 9000 series Other system: _____
 Own system No quality system
- b) Is the system certified? _____ When will it be certified? _____

12 a) What kind of environmental system does your company have?
 ISO 14001 Other system: _____
 EMAS No environmental system

- b) Is the system certified? _____ When will it be certified? _____
 c) What does your most important customer demand in terms of environmental requirements?

13 a) Who took the initiative when your company started delivering to “the buyer company”?

The buyer company Your company Other: _____

b) Has there been any break in your company's relationship to “the buyer company”?

Yes No

If yes, when and why? _____

c) If yes, who took the initiative to continue the business relationship again, and why?

14. What adaptations do you consider that your company have done as a result of being a supplier to “the buyer company”?

Product	Great adaptations			Minor adaptations		
	6	5	4	3	2	1
Product	6	5	4	3	2	1
Product development	6	5	4	3	2	1
Production	6	5	4	3	2	1
Logistics and distribution	6	5	4	3	2	1
Stock keeping	6	5	4	3	2	1
Administration routines	6	5	4	3	2	1
Purchasing	6	5	4	3	2	1
Marketing	6	5	4	3	2	1
Payment routines	6	5	4	3	2	1
Information technology	6	5	4	3	2	1
Quality work	6	5	4	3	2	1
Information exchange	6	5	4	3	2	1
Personnel training	6	5	4	3	2	1
Environmental requirements	6	5	4	3	2	1
Other adaptations, which? _____						

15. Which possibilities does your company have to replace the loss of sales if “the buyer company” would stop buying your products? *(Please, mark the alternative that best describes the current situation)*

Great possibilities Some possibilities No possibilities I do not know

16 a) How would you describe your company's relationship to “the buyer company”?

(Please, mark the alternative that best describes the current situation)

Excellent Good Could be better Poor

b) What could be improved in your company's relationship to “the buyer company”? *(Write on the back of the paper, or on a separate sheet if needed)* _____

17. Which company is stronger?

“the buyer company” Your company Equally strong I do not know

18. Who takes initiative to product development?

“the buyer company” Your company Both together

19. Who does the quality control of your products?

“the buyer company” Your company Both together

20 a) Do you have a written contract with “the buyer company”? Yes No

If yes, for how many years at a time? 1 year 2 years Other: _____

b) For how long period of time is “the buyer company's delivery schedules made in advance?”

_____ weeks

c) In which ways are your company responsible for stock keeping of the products that you deliver to “the buyer company”?

- Deliver to “the buyer company” upon their order
- Deliver when the products are needed (you check yourselves)
- Other: _____

21. In which ways has your company’s relationship to “the buyer company” had effects on the following factors? *(Please, put a mark under the suitable heading)*

	Very positively	Positively	No effect	Negatively	Very negatively
Market share					
Profitability					
Turnover					
Relations to other customers					
Competitiveness					
Efficiency					
Quality system					
Purchasing					
Research and development					
Technology					
E-commerce					

22 a) Estimate how large percentage of the total yearly communication with “the buyer company” is made through following communication channels. *(Divide 100% among the following alternatives)*

_____ Telephone _____ Letter _____ Telefax
 _____ E-mail/Internet _____ Meetings _____ Video conferences

b) Which company usually takes contact? “the buyer company” Your company

23 a) How is “the buyer company” influencing your purchasing function? *(Write on the back of the paper, or on a separate sheet if needed)* _____

b) Is “the buyer company” helping your company with it’s purchasing function?

Yes, how: _____ No

If no, would you wish that “the buyer company” should help you with the purchasing, and in that case, how? *(Write on the back of the paper, or on a separate sheet if needed)*

24 a) Does your company have suppliers which deliver products to be assembled in your factory for “the buyer company”? Yes No

If yes, Who is/are the supplier(s)? _____

If no, why not? _____

b) Does your company deliver products to another supplier for production of “the buyer company’s products”? Yes No

If yes, to which supplier(s)? _____

If no, why not? _____

c) How large percentage of your total turnover consists of sub deliveries? _____%

25 a) Do you have cooperation with other companies that also delivers to “the buyer company”? Yes

No

If yes, in which ways/ If no, why not? _____

b) With which companies does your company cooperate? _____

c) In which ways have you agreed upon the cooperation?

In writing with _____ companies Orally with _____ companies

Other arrangement: _____

d) Do you consider that the cooperation with your most important cooperation partner has increased your competitiveness? Yes No I do not know

e) Do you have cooperation with other companies within the following areas and how important is it?

	Very important			Less important			No cooperation	
Production	6	5	4	3	2	1	0	
Product development	6	5	4	3	2	1	0	
Stock keeping	6	5	4	3	2	1	0	
Purchasing	6	5	4	3	2	1	0	
Quality work	6	5	4	3	2	1	0	
Environmental aspects	6	5	4	3	2	1	0	
Logistics and distribution	6	5	4	3	2	1	0	
Marketing	6	5	4	3	2	1	0	
Other activity: _____	6	5	4	3	2	1	0	

f) How many years is your longest cooperative relationship? _____ years

g) Who took the initiative to this cooperation?

Your company Your cooperation partner "the buyer company"

h) Are you satisfied with this cooperation? Yes No, why not? _____

i) Would you like to increase the cooperation? Yes No

Within which areas and how? _____

26 a) What does your company's relationship to "the buyer company" consist of? (*Choose one or more of these alternatives*)

They are buying sometimes from you They are helping you regularly

They are buying regularly from you It is a mutual cooperation

You can ask for advice when needed Partnership

b) Do you have cooperation with "the buyer company" within the following areas and how important is it?

	Very important			Less important			No cooperation	
Production	6	5	4	3	2	1	0	
Product development	6	5	4	3	2	1	0	
Stock keeping	6	5	4	3	2	1	0	
Purchasing	6	5	4	3	2	1	0	
Quality work	6	5	4	3	2	1	0	
Environmental aspects	6	5	4	3	2	1	0	
Logistics and distribution	6	5	4	3	2	1	0	
Marketing	6	5	4	3	2	1	0	
Other activity: _____	6	5	4	3	2	1	0	

c) Would you like to increase the contact with "the buyer company"? Yes No

d) Within which areas would you like to increase the contact?

Production Product development Stock keeping Purchasing Quality

Environment Logistics & distribution Marketing Other: _____

e) What are the greatest problems with increasing contact? _____

27. What plans does your company have within the nearest future? _____

THANK YOU FOR YOUR TIME

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Appendix 3 Interviews done during the study

Interviews with the suppliers for the pilot study

- *company 1, 7.4, 1999, interviewed by the RA and Å. H-A
- *company 2, 13.4, 1999, interviewed by the RA
- *company 3, 9.4, 1999, interviewed by the RA
- *company 4, 7.4, 1999, interviewed by the RA
- *company 5, 14.4, 1999, interviewed by the RA
- *company 6, 29.4, 1999, interviewed by the RA
- *company 7, 26.4, 1999, interviewed by the RA
- *company 8, 6.5, 1999, interviewed by the RA
- *company 9, 22.12, 1999, interviewed by Å. H-A and S.Å.
- *company 10, 25.2.1999 interviewed by Å. H-A
- *company 11, 17.2.1999 interviewed by Å. H-A and S.Å.
- *company 12, 17.3.1999 interviewed by Å. H-A.
- *company 13, 10.12, 1998, interviewed by S.Å
- *company 14, 10.12.1998 interviewed by S.Å.
- *company 15, 10.12, 1998, interviewed by S. Å.
- *company 16, 25.11, 1998, interviewed by S.Å.
- *company 17, 25.11, 1998, interviewed by S.Å.

Å.H-A: Åsa Hagberg-Andersson

S.Å: Sara Åhman

RA: Research assistant in the project

Interviews at the focal buyer

- *informant 1, 24.2.2000, interviewed by Å. H-A and S.Å.
- *informant 2, 13.3.2000, interviewed by Å. H-A and S.Å.
- *informant 3, 19.4, 2000, interviewed by Å. H-A and S.Å.
- *informant 4, 31.5, 2000, interviewed by Å. H-A and S.Å.
- *informant 5, 6.6, 2000, interviewed by Å. H-A and S.Å.
- *informant 6, 14.6, 2000, interviewed by Å. H-A and S.Å.
- *informant 7, 16.6, 2000, interviewed by Å. H-A and S.Å.
- *informant 8, 24.6, 2000, interviewed by Å. H-A and S.Å.

Interviews for the calibration case

- *informant 1, 29.3, 2001, 10-11.15, individual in charge of calibration, interviewed by Å. H-A
- *informant 2, 11.4, 2001, 10-11.30, unit manager, interviewed by Å. H-A
- *informant 3, 11.4, 2001, 13-14.00, quality engineer, interviewed by Å. H-A
- *informant 3, 17.4, 2001, 10-11.00, owner and VP, interviewed by Å. H-A
- *informant 4, 19.4, 2001, 10-11.00, owner and VP, interviewed by Å. H-A
- *informant 5, 24.4, 2001, 10-11.45, owner and vice president, interviewed by Å. H-A
- *informant 6, 24.4, 2001, 14-14.45, quality engineer, interviewed by Å. H-A
- *informant 7, 27.4, 2001, 10-11.30, owner and VP, interviewed by Å. H-A

Interview for the furniture case

- *informant 1, 14.6.2005 by H.V

H.V.: Henrik Virtanen